Anritsu

MP1630B
Digital Data Analyzer
Operation Manual

Read this manual before using the equipment.
Keep this manual with the equipment.

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Digital Data Analyzer
Operation Manual

First Edition

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Measuring Instruments Division
Measurement Group
ANRITSU CORPORATION

Document No. : M-W1442AE-1.0

Safety Symbols

To prevent the risk of personal injury or loss related to equipment malfunction, Anritsu Corporation uses the following safety symbols to indicate safety-related information. Insure that you clearly understand the meaning of the symbols BEFORE using the equipment.

(Some or all of the following five symbols may not be used on all Anritsu equipment. In addition, there may be other labels attached to products which are not shown in the diagrams in this manual.)

Symbols used in manual

DANGER

This indicates a very dangerous procedure that could result in serious injury or death if not performed properly.

WARNING

This indicates a hazardous procedure that could result in serious injury or death if not performed properly.

CAUTION

This indicates a hazardous procedure or danger that could result in light-to-severe injury, or loss related to equipment malfunction, if proper precautions are not taken.

Safety Symbols Used on Equipment and in Manual

The following safety symbols are used inside or on the equipment near operation locations to provide information about safety items and operation precautions. Insure that you clearly understand the meanings of the symbols and take the necessary precautions BEFORE using the equipment.

This indicates a prohibited operation. The prohibited operation is indicated symbolically in or near the barred circle

This indicates an obligatory safety precaution. The obligatory operation is indicated in or near the circle

This indicates warning or caution. The contents are indicated symbolically in or near the triangle.

This indicates a note. The contents are described in the box.

These indicate that the marked part should be recycled.

MU1630B
Digital Data Analyzer
Operation Manual

31 August 1998 (First Edition)

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WARNING ⚠

1. ALWAYS refer to the operation manual when working near location at which the alert mark shown on the left is attached. If the operation, etc., is performed without heeding the advice in the operation manual, there is a risk of personal injury. In addition, the equipment performance may be reduced.
   Moreover, this alert mark is sometimes used with other marks and descriptions indicating other dangerous.

2. When supplying power to this equipment, connect the accessory 3-pin power cord to a 3-pin grounded power outlet. If a grounded 3-pin outlet is not available, before supplying power to the equipment, use a conversion adapter and ground the green wire, or connect the frame ground on the rear panel of the equipment to ground. If power is supplied without grounding the equipment, there is a risk of receiving a severe or fatal electric shock.

Repair

WARNING ⚠

3. This equipment cannot be repaired by the user. DO NOT attempt to open the cabinet or to disassemble internal parts. Only Anritsu-trained service personnel or staff from your sales representative with a knowledge of electrical fire and shock hazards should service this equipment. These are high-voltage parts in this equipment presenting a risk of severe injury or fatal electric shock to untrained personnel. In addition, there is a risk of damage to precision parts.

WARNING ⚠

Falling Over

4. This equipment should be used in the correct position. If the cabinet is turned on its side, etc., it will be unstable and may be damaged if it falls over as a result of receiving a slight mechanical shock.

LCD

5. This instrument uses a Liquid Crystal Display(LCD) ; DO NOT subject the instrument to excessive force or drop it. If the LCD is subjected to strong mechanical shock, it may brake and liquid may leak.
This liquid is very caustic and poisonous.
DO NOT touch it, ingest it, or get in your eyes, If it is ingested accidentally, spit it out immediately, rinse your mouth with water and seek medical help. If it enters your eyes accidentally, do not rub your eyes, irrigate them with clean running water and seek medical help. If the liquid gets on your skin or clothes, wash it off carefully and thoroughly.

CAUTION ⚠

Changing Fuse

CAUTION ⚠

1. Before changing the fuses, ALWAYS remove the power cord from the power outlet and replace the blown fuses. ALWAYS use new fuses of type and rating specified on fuse marking on the rear panel of cabinet.

   T__A indicates a time-lag fuse.
   __A or F__A indicate a normal fusing type fuse.

   There is risk of receiving a fatal electric shock if the fuses are replaced with the power cord connected.

Cleaning

2. Keep the power supply and cooling fan free or dust.
   - Clean the power inlet regularly. If dust accumulates around the power pin, there is a risk of fire.
   - Keep the cooling fan clean so that the ventilation holes are not obstructed. If the ventilation is obstructed, the cabinet may overheat and catch fire.

3. Use two or more people to lift and move this equipment, or use a trolley. There is a risk of back injury, if this equipment is lifted by one person

CAUTION ⚠

Changing memory back-up battery

This equipment uses a lithium battery to back-up the memory. This battery must be replaced by a service engineer when it has reached the end of its useful life ; contact the Anritsu sales section or your nearest representative.

Remark:The battery limits approximately 7 years after purchasing date. Advance change is preferable.

Storage media

This equipment uses HDD and FDD as external media for storing data and programs.

If this media is mishandled, important data may be lost. To prevent this chance occurrence, all important data and program should be back-up.

Anritsu will not be held responsible for lost data

Pay careful attention to the following points.

- Never turn off the power, while the HDD is being accessed.
- Never give the equipment vibration or shock to avoid crush in the HDD.
- Never remove the FD from the FDD, while it is being accessed.

Equipment Certificate

Anritsu Corporation certifies that this equipment was tested before shipment using caribrated measuring instruments with direct traceability to public testing organizations recognized by national research laboratories including the Electrotechnical Laboratory, National Research Laboratory and the Communication Research Laboratory, and was found to meet the published specification.

Anritsu Warranty

Anritsu Corporation will repair this equipment free-of- charge if malfunction occurs within 1 year after shipment due to manufacturing fault, provided that this warranty is rendered void under any or all of following condition.

- The fault is outside the scope of the warranty conditions described in operation manual.
- The fault is due to mishandling, misuse, or unauthorized modification or repair of the equipment by customer.
- The fault is due to severe usage clearly exceeding normal usage.
- The fault is due to improper or insufficient maintenance by customer.
- The fault is due to natural disaster including fire, flooding, earthquake, etc.
- The fault is due to use of non-specified peripheral equipment, peripheral parts, consumables, etc.
- The fault is due to use of non-specified power supply or in a non-specified installation location.

In addition, this warranty is valid only for the original equipment purchaser. It is not transferable if the equipment is resold.

Anritsu Corporation will not accept liability for faults due to unforeseen and unusual circumstances, nor faults due to mishandling by the customer.

Anritsu Corporation Contact

If this equipment develops a faults, contact Anritsu Corporation or its representatives at the address in this manual.

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Waste disposal

This equipment uses a lithium battery.
Check with your local solid waste officials for details in your area for proper disposal.

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CE Conformity Marking

1. Product Name/Model Name
   Product Name: Digital Data Analyzer, and Expansion Unit
   Model Name: MP1630B

2. Applied Directive
   EMC: Council Directive 89/336/EEC
   Safety: Council Directive 73/23/EEC

3. Applied Standards
   EMC:
   Electromagnetic radiation :
   EN55011l(ISM, Group 1, Class A equipment)
   Immunity:
   EN50082-1

	Performance Criteria*
IEC801-2 (ESD) 4 kVCD, 8 kVAD	B
IEC801-3 (Rad.) 3 V/m	A
IEC801-4 (EFT) 1 kV	B

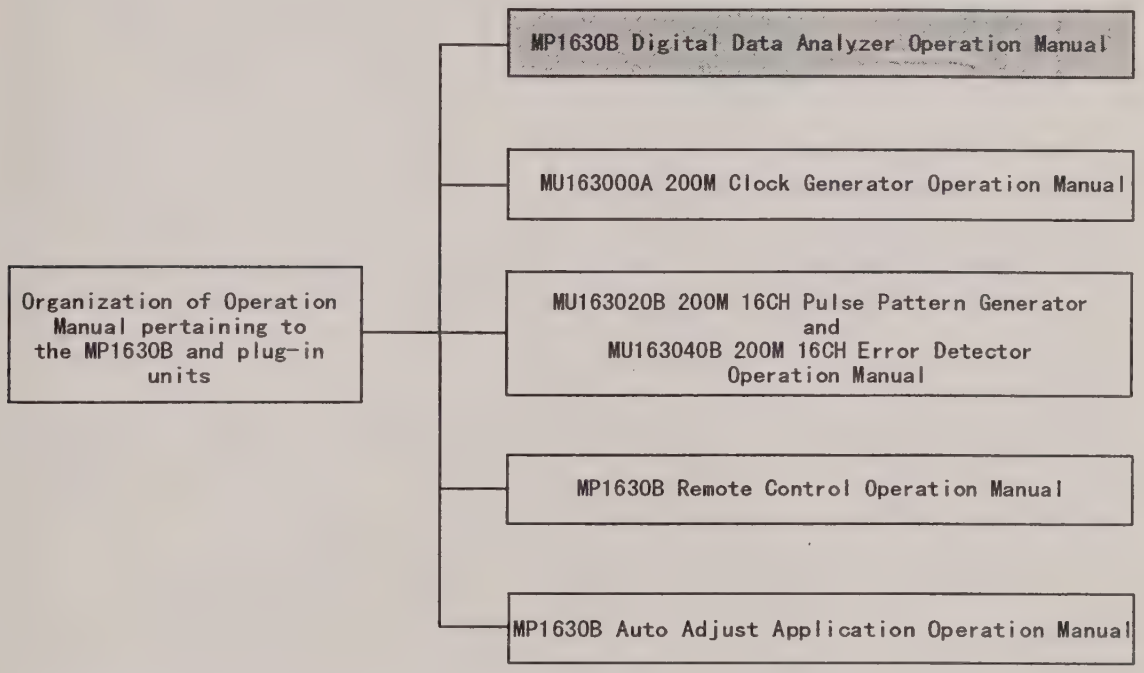
*:Performance Criteria
A: No performance degradation or function loss
B: Self-recovered temporary degradation of performance or temporary loss of function

Safery :
EN61010-1(Installation Caregory II, Pollution Degree 2)

Introduction

Organization of Operation Manual

The MP1630B Digital Data Analyzer is a measuring instrument designed to house plug-in units. Operation Manual are divided into five volumes pertaining to the MP1630B Digital Data Analyzer itself and the individual plug-in units. Use these user's guides to suit intended applications.


Organization of Operation Manual pertaining to the MP1630B and plug-in units
MP1630B Digital Data Analyzer Operation Manual
MU163000A 200M Clock Generator Operation Manual
MU163020B 200M 16CH Pulse Pattern Generator and MU163040B 200M 16CH Error Detector Operation Manual
MP1630B Remote Control Operation Manual
MP1630B Auto Adjust Application Operation Manual

- MP1630B Digital Data Analyzer Operation Manual
  Gives an overview of the MP1630B and describes its setup steps, its panels, the relevant standards, performance details, and how to operate the unit.
- MU163000A 200M Clock Generator Operation Manual
  Gives an overview of the MU163000A 200M clock generator unit and describes the relevant standards, performance details, and how to operate the unit.
- MU163020B 200M 16CH PPG&MU163040B 200M 16CH ED Operation Manual
  Gives an overview of the 200M 16CH PPG and ED units and describes the relevant standards, performance details, and how to operate the units.
- MP1630B Remote Control Operation Manual
  Explains the concepts of external interface (RS-232C, GPIB option,ETHERNET option) control, and also contains sample programs.
- MP1630B Auto Adjust Application Operation Manual

  Explains how to operate the relevant to the MP1630B Auto Adjust Application Operation Manual

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CHAPTER 1 OVERVIEW

1.1 Product Overview

The MP1630B digital data analyzer (hereafter simply called this instrument) houses a variety of plug-in units as a mainframe to build diverse systems on different unit configurations. The instrument, when coupled with plug-in units, supports the tasks of evaluating digital communications equipment, O/E, E/O and other modules, and digital ICs in R&D and manufacturing applications.

Features

- User-friendly operations
  With Microsoft® Windows® Operating System Version 3.1 support and a large color LCD screen, this instrument makes applications easier to understand and run.
- Tool-based display operations
  The instrument provides a touch panel, a mouse, and panel keys as display interfaces to add to the ease of display operations.
- Ability to save and open large volumes of data
  The instrument houses an FDD and an HDD as storage to save and open various data, such as setup information and measurement data.
- External interface support
  The instrument supports RS-232C, and GPIB (option), ETHERNET (option) as remote control interfaces.
- Extensible unit configuration
  A variety of systems can be built depending on the plug-in unit configuration. Expansion slot also readily meet future upgrade needs.

1.2 Organization of the Operation Manual

Information in this Operation Manual is organized into eight chapters, two appendixes, and one index.

Chapter number	Topics
Chapter 1 Overview	Product overview, organization of the operation manual, hardware configurations, specifications
Chapter 2 Setup	Ambient conditions, safety precautions, preparations for turning power on
Chapter 3 Panel Description and Connections	Location and functions of instrument panel keys, LEDs, connectors, and so on
Chapter 4 Starting and Stopping the MP1630A	How to start and stop the MP1630B
Chapter 5 Display Description	Window organization and operating instructions
Chapter 6 Operating Instructions	How to use functions
Chapter 7 Maintenance	Preventive maintenance to ensure safety, storage tips, calibration, storage and shipping tips
Chapter 8 Scrapping	Scrapping notes
Appendixes	Factory default settings
Index	

1.3 Hardware Configurations

1.3.1 Standard configuration

Table 1-1 breaks down the standard configuration of this instrument.

Table 1-1 Standard Configuration

Item	Type and symbol	Description	Quantity	Remarks
Hardware configuration	MP1630B	Digital Data Analyzer	1	
Accessories supplied	J0419	Power cable	1	13A
	F0087	Fuse	2	10A
	W1442AE	MP1630B Digital Data Analyzer Operation Manual	1	
	W1443AE	MP1630B Remote Control Operation Manual	1	
	Z0319A	PS/2 Mouse	1	
	Z0320	Touch screen pen	1	
	Z0388	MP1630B Recovery Disk	11	FD
	Z0389	MP1630B Application Disk	7	FD
	Z0390	MP1630B Remote sample Disk	1	FD

1.3.2 Unit configuration

Table 1-2 lists the types of plug-in units that can be used with this instrument.

Table 1-2 Unit Configuration

Type and symbol	Description	Remarks
MU163000A	200M Clock Generator	Clock generator having a frequency range of 10 kHz to 200 MHz. Jitter features optionally available.
MU163020B	200M 16ch Pulse Pattern Generator	16CH pulse pattern generator having burst signals with an operating frequency of 10 kbps to 200 Mbps
MU163040B	200M 16ch Error Detector	16CH error detector having burst signals with an operating frequency of 10 kbps to 200 Mbps

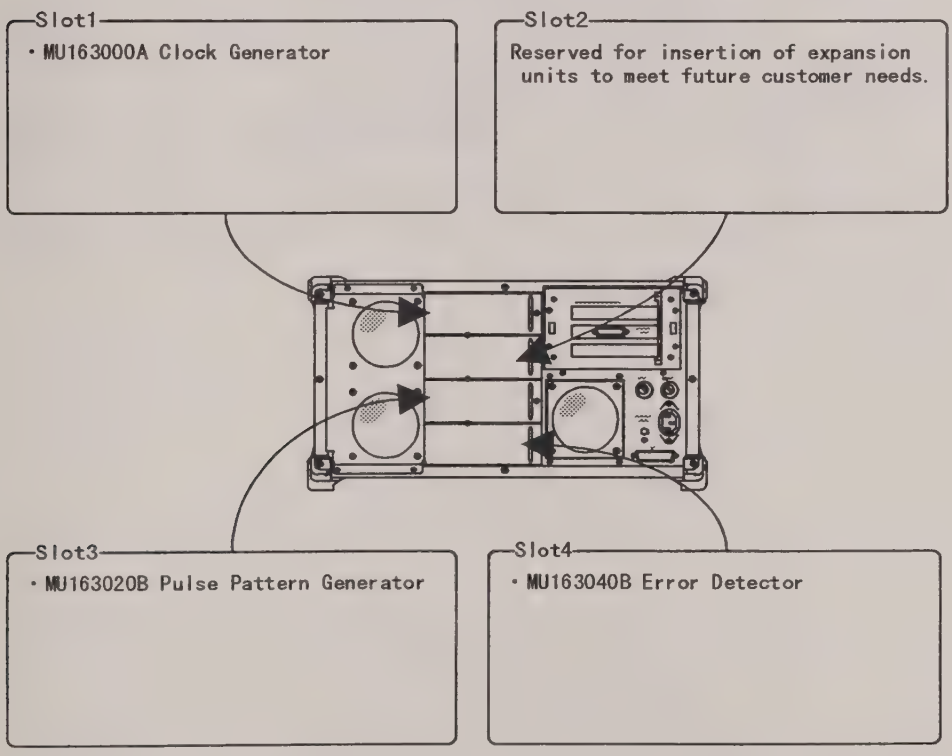

Figure 1-1 Unit Configuration

1.3.3 Optional configuration

Table 1-3 lists the options that can be used with this instrument.

Table 1-3 Optional Configuration

Type and symbol	Description	Remarks
MP1630B-01	GPIB	GPIB
MP1630B-02	ETHERNET	Ethernet

1.3.4 Applied components

Table 1-4 lists the applied components that can be used with this instrument.

Table 1-4 Applied Components

Type and symbol	Description	Remarks
Z0321A	keyboard	PS/2
J0008	GPIB cable	2.0m, 408JE-102
MB24B	Portable Test Rack	Specified current 20A
B0348	Soft case	
B0329D	Front cover	
B0333D	Rack mount kit	

1.4 Specifications

Table 1-5 lists the specifications of this instrument. Asterisks (*) denote the functions that require the installation of options as described outside the table.

Table 1-5 Specifications

Item	Specifications
Screen display Size Colors Connector	Backlight LCD screen(10.4inch) 640x480 dots 256 colors (16M colors on an external display via a VGA) Analog RGB Mini D-SUB 15-pin (for connection to an external display)
Printer Connector	 Parallel port connector (for connection to an external printer)
Keyboard Connector	English 101-key keyboard PS/2 type mini DIN 6-pin
Mouse Connector	Serial mouse PS/2 type mini DIN 6-pin
Touch screen	Touch screen
Floppy disk drive Operation mode Disk	 Dual modes (1.44 MB, 740 KB) 3.5-inch 2HD/2DD
Hard disk drives Disk sizes Interface	 Drive C: 1380 MB> (Used to store measurement data.) Drive D: 30 MB (Virtual memory drive: not accessible to users) IDE interface
External control RS-232C GPIB (*1) ETHERNET(*2)	 COM1 D-sub 9-pin IEEE488.2 (SH1,AH1,T6,L4,SR1,RL1,PP0,DC1,DT1,C0) 10BaseT
Sound	Alarm: ON or OFF; Error: ON or OFF
Panel lock	ON or OFF
Operating temperature range	5℃ to 40℃
Dimensions and weight Dimensions Weight	 221.5H×426W×451D mm Max.20kg(when the unit are not installed.)
Power supply Voltage Frequency Power consumption	 100 V to 120 VAC/200 V to 240 VAC 47.5 Hz to 63 Hz Max.150VA(when the unit are not installed.) Max.1kVA(when the unit are installed.)

*1 Operable if OPT01 is installed.

*2 Operable if OPT02 is installed.

CHAPTER 2 SETUP

2.1 Ambient Conditions

This instrument is designed to operate correctly in an ambient temperature range of 5℃ to 45℃ and at an ambient relative humidity not exceeding 85%. Recommended ambient storage conditions are an ambient temperature range of -20℃ to 60℃ and an ambient relative humidity not exceeding 85%.

Avoid using and storing the instrument in these places:

1. Places that are subject to violent vibration
2. Places that are dusty
3. Places that are exposed to direct sunlight
4. Places that may be affected by active gases
5. Places where drops of water may collect on the instrument

⚠ CAUTION

1. Do not block the air inlets and outlets on the rear and side of the instrument. In particular, keep a clearance of at least 20 cm between the back of the instrument and the surrounding equipment, obstacles and so on. Inadequate air inflow or outflow could result in an abnormal internal temperature rise, leading to failure.
2. When the instrument is returned to room temperature after it has been left at a low temperature for a long time, internal circuitry could be short-circuited due to dew condensation, leading to failure. Allow the instrument to dry fully before operation.

2.2 Safety Precautions

For safety assurance's sake, observe the safety precautions given below. For tips on starting and stopping the instrument, see Chapter 4, "Starting and Stopping the MP1630B."

⚠ WARNING

1. Check that the instrument's power switch is OFF before inserting its power cable into an AC receptacle. Negligence of this precaution could lead to injury, or electrical shocks leading to death.
2. Whenever using a double-pole receptacle, ground the rear-panel frame ground terminal to avoid electrical shock accidents.

⚠ CAUTION

1. The instrument operates from 100 V to 120 VAC or from 200 V to 240 VAC. Carefully check the supply voltage and rating of the AC receptacle available before inserting the power cable into it.
2. In supplying signals to the instrument, avoid voltage input in excess of its rating. Damage to its circuitry could result.
3. Terminate the output with a 50-ohm terminator; never allow current flow into it.
4. Before connecting I/O terminals to any other equipment (including an experimental circuit), ground their connection with a grounding wire to provide against electrostatic effects.
5. The external conductor and the core of a coaxial cable could be charged as capacitors. Allow them to discharge using metals or similar materials before using the cable.
6. Turn the power off before replacing plug-in units or connecting a mouse, keyboard, or printer to the instrument.
7. Do not replace the plug-in units by users themselves. Replacement is performed by Anritsu service department. Contact your dealer or Anritsu sales office.
8. The instrument contains a hard disk. To protect the hard disk, avoid vibration or impact to the instrument.
9. Never turn off the power while the front-panel hard disk access lamp is on. Damage to the hard disk could result.
10. Do not touch the touch screen with objects other than the custom pen supplied and fingers.
11. Never open the instrument. We may turn down requests to service the instrument if its degraded performance has been caused by such opening.
12. The memory backup battery used in this instrument has a service life of about 7 years. If the service life expires, information stored in the backup memory would be lost and the instrument, when turned on, would be unable to resume the status in which it had been when it was last turned off. Replace the battery before its service life expires

2.3 Grounding

To supply power to this instrument, insert the three-core power cable supplied with this instrument into a grounded receptacle to ensure that it is grounded.

If a grounded receptacle is not available, connect the rear-panel grounding terminal to the ground before inserting the power cable into an AC receptacle.

⚠ WARNING

Failure to ground the instrument before turning it on could lead to injury, or electrical shocks leading to death. Insert the three-core power cable into a grounded two-pole receptacle or connect the grounding wire of the conversion adapter or the rear-panel grounding terminal to the ground.

2.4 Running Applications Successfully

In addition to the Microsoft® MS-DOS® Operating System and Microsoft® Windows® Operating System, this instrument has device control drivers and other software installed.

While you can make alterations to the Windows® operating environment via Control Panel or Windows setup program, successful functioning of the application would be unpredictable if any alteration is made beyond the scope of alterations mentioned in this operation manual.

Do not make alterations to the Windows® operating environment for any other purpose or in any other method than those mentioned in this operation manual.

CHAPTER 3 PANEL DESCRIPTION AND CONNECTIONS

3.1 Panel Description

The view of this instrument's front and rear panels are shown below, along with a summary description of their component functions.

Front panel

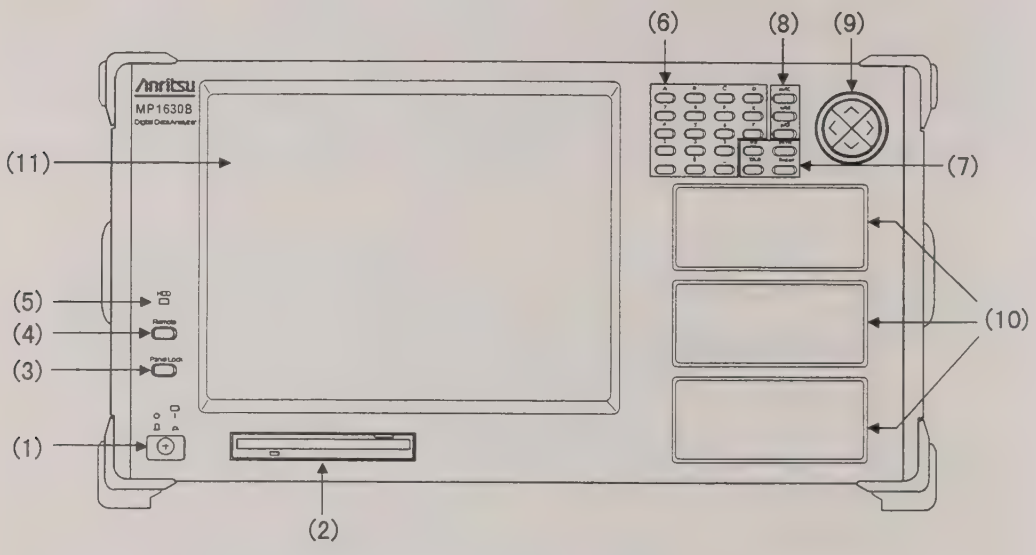

Figure 3-1 Front Panel

Number	Label	Name	Description
1		Power switch (with a power-on LED)	Turns AC power on or off.
2		Floppy disk drive	3.5-inch FDD. Dual modes: 2DD (720 KB) and 2HD (1.44 MB)
3	Panel Lock	Panel lock key	Disables front-panel operations. The LED is on when the front panel is locked.
4	Local	Local key (with a remote LED)	Switches the instrument from the remote mode to the local mode. The LED is on when the instrument is in the remote mode.
5	HDD	Hard disk drive access LED	Lights when access to the hard disk drive is in progress.
6	[0] through [9], [-], [.], and [A] through [F]	Numeric value entry keys	Enter numeric values.
7	Tab,Shift,BS, Enter	Display control keys	Accept entries, move the focus, and otherwise control displays.
8	m/k,n/M,p/G	Unit keys	Select units for entering numeric values.
9		Rotary encoder (with up, down, left, and right keys)	Alter numeric values continuously. The up, down, left, and right keys are used mainly to move the highlighted cursor.
10		Slots 2 to 4	The front panels of the units inserted in slots 2 to 4 appear at this position.
11		Color LCD	Display with a touch screen, that displays setup items and measurement data.

Rear panel

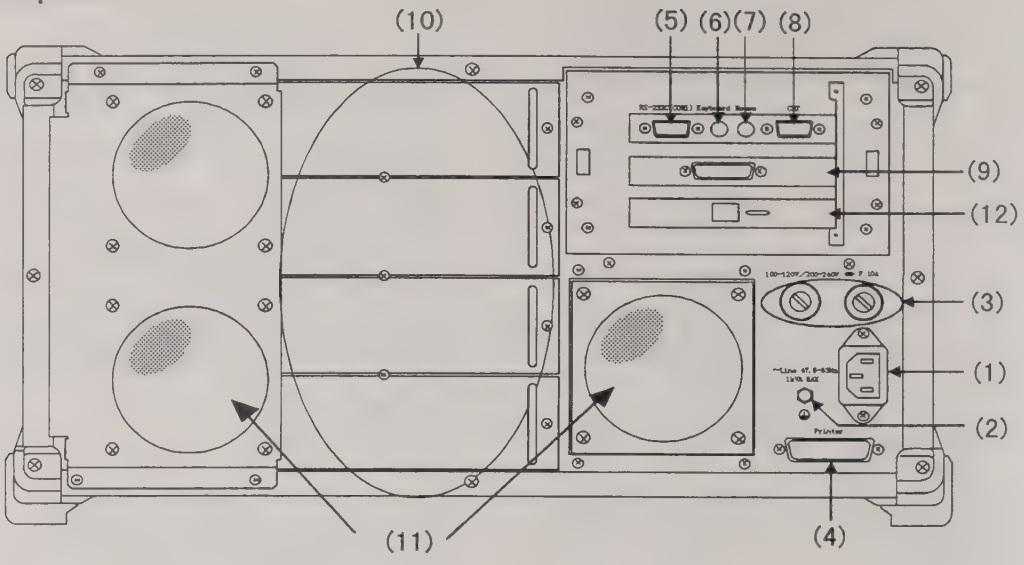

Figure 3-2 Rear Panel

Number	Label	Name	Description
1		AC power connector	AC power connector
2		Frame ground	Frame ground terminal
3		Fuse holder	AC power fuse holder
4	Printer	Printer connector	Connector to which an external printer is connected
5	RS-232C(COM1)	RS-232C connector	Connector used to connect an external controller to this instrument via an RS-232C interface
6	Keyboard	Keyboard	Connector to which the keyboard is connected
7	Mouse	Mouse connector	Connector to which the mouse is connected
8	CRT	VGA connector	Connector to which an external display is connected
9	GPIB (OPT01)	GPIB connector	Connector used to connect an external controller to this instrument via an GPIB interface
10		Slots 1 to 4	Units in which plug-in units are inserted
11		Fan	Cooling fan
12	ETHERNET (OPT02)	10BaseT(RJ-45) connector	Connector used to connect an external controller to this instrument via an ETHERNET interface

3.2 Connections

3.2.1 Sample connections of peripherals

A mouse, a keyboard, a printer, an external display, and a personal computer (used as a controller) can be connected to this instrument's rear panel. Sample connections are shown below.

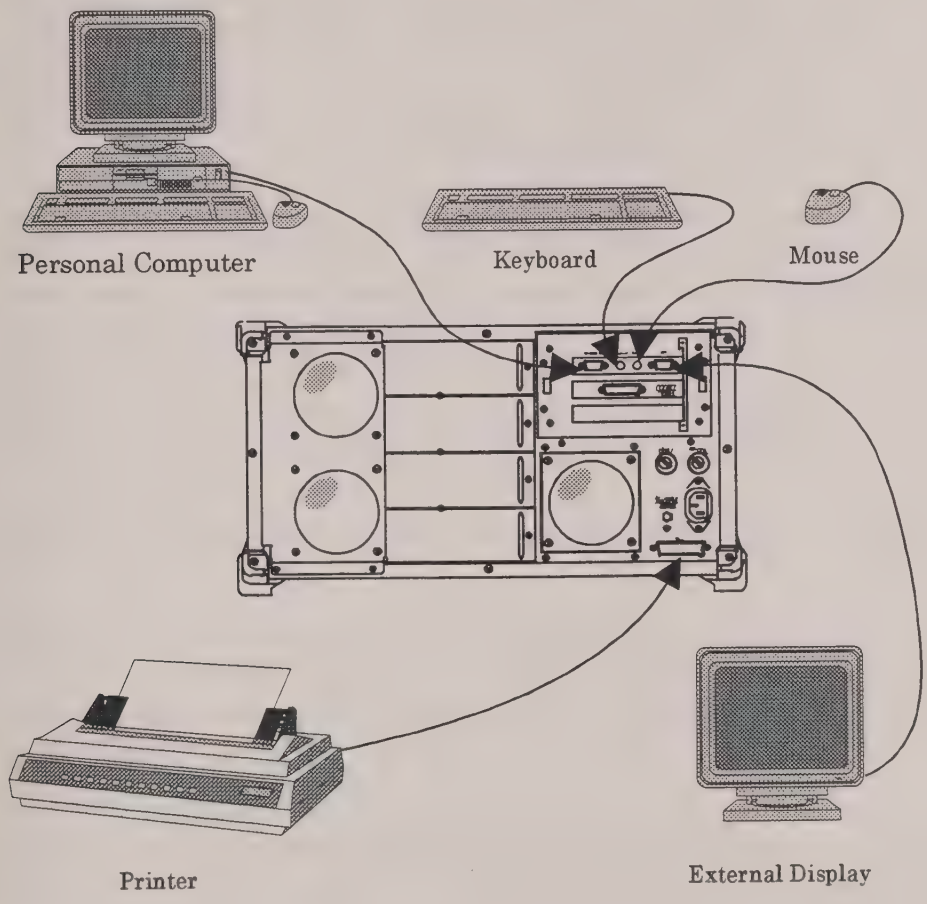

Figure 3-3 Connecting Peripherals and External Devices

3.2.2 Connecting peripherals

Procedures for connecting peripherals to this instrument are explained below, along with tips.

■ Mouse

Connect the serial mouse (supplied with this instrument as a standard accessory) to the rear-panel mouse connector while this instrument is off, and then turn it on. The mouse becomes operable when the application starts running.

To enter detailed mouse settings (such as moving speed and double click intervals), select Mouse from Microsoft® Windows® Operating System Control Panel.

Note

Control Panel can be opened by double-clicking the Control Panel icon from the Microsoft Windows® Main group.

■ Keyboard

Connect the 101-key keyboard (applied component) to the rear-panel keyboard connector while this instrument is off, and then turn it on. The keyboard becomes operable when the application starts running.

To enter detailed keyboard settings (such as the auto-repeat function), select Keyboard from Windows® Control Panel

Note

To connect any other keyboard than the 101-key keyboard, select the Windows Setup program from the Windows® Main group.

■ Printer

Connect a printer to the rear-panel printer connector while this instrument is off, and then turn it on. When the application has started running, select Printers icon from Windows® Control Panel to set the printer up.

Note

The message of "Insert Microsoft Windows 3.1 Disk #5 ...." may be displayed while setting the printer via Printers of Control Panel. In this case, insert the attached Recovery Disk to FDD.
The table below define the disk number of Recovery Disk corresponding to displayed disk number by the message.

Displayed disk number by the message	1	2		5	6
Disk number of Recovery Disk	5	6		9	10

■ External display

An external display connected to the instrument provides high-resolution display images. To connect an external display to the instrument, follow these steps.

1. Connect an external display to the rear-panel VGA connector while the instrument is off.
2. Turn on the instrument. The application will display on both the LCD on the instrument's front panel and on the CRT screen of the external display.
3. Select the ChipsCLP icon from Windows® Control Panel and run the Display Driver Control Panel program.
4. Select a resolution, number of colors, and font size to set the required screen condition, then specify "CRT" in the "Display" group box.
5. The setting has been completed. Press the OK button; the Display Driver Control Panel program exits.

Note

When you select either the CRT or LCD in the Display group box setting of the Display Control panel program, the other not displayed. For example, when you select the CRT, the LCD on the instrument's front panel is disabled; when you select the LCD, the CRT screen of the external display is disabled.

CHAPTER 4 STARTING AND STOPPING THE MP1630B

4.1 Starting and Stopping the MP1630B

Microsoft® MS-DOS® Operating System and Microsoft® Windows® Operating System (hereafter simply called Windows®) are used as display control software in this instrument, so that you can run the application for this instrument the same way as you do applications on Windows®. This section explains how to start and stop the instrument.

Starting the MP1630B

There are two ways to start this instrument:

- Turn on the power.
  Turn on the instrument. The system will start up and the application will run automatically.
- Start from the Windows® program manager.
  Double-click the MP1630B Digital Analyzer icon in the program manager's MP1630B group, causing the application to start running.

Note

This instrument stores, in its internal memory, the status in which it had been when it was last turned off. This status is resumed when it is turned on.

The remote/local status and the panel lock state are initialized.
(Remote/local status:Local Panel lock state:OFF)

Stopping the MP1630B

To stop the instrument, follow these steps:

1. Select [File]-[Exit] from the parent window menu bar. The application will terminate, with only Windows® operating.
2. Select [File]-[Exit Windows] from the Windows® program manager. Windows® will terminate.
3. When Windows® terminates, the MP1630B program menu opens. Turn off the power in this state.

⚠ CAUTION

1. Damage to the hard disk might result if the instrument is stopped in any other way (such as turning off the front-panel power switch while the instrument is functioning). To protect the hard disk, use the method suggested above to stop the instrument, except in times of emergencies (such as a power failure or inadvertent disconnection of the instrument from the AC receptacle). For safeguards against power failures, see the section6.4 "Setting System Operations".
2. Do not turn off the instrument while access to the hard disk drive is in progress (with the access lamp is lit). Damage to the hard disk could result.

4.2 Definitions of Keywords

Because this instrument supports Windows®, Windows® terms are sometimes used in its context in this user's guide. Windows® terms and operations frequently mentioned in this guide are defined below.

General terms

General terms appearing in the user's guide are defined below. (The use of a mouse is assumed.)

- Mouse pointer
  An on-screen graphic object that designates the location of the mouse on the screen. The mouse pointer varies in its shape to an arrow, hour glass and so on depending on its location or the operation of the application.
- Click
  The process of pressing and then releasing a mouse button at a given position.
- Double-click
  The process of pressing a mouse button twice in rapid succession at a given position.
- Drag
  The process of moving the mouse while holding down a mouse button.
- Drop
  The process of releasing the mouse button after dragging.
- Control
  Refers to an object placed on the screen, such as a button or text box. Controls are used to present data or choose items.
- Focus
  The state of being ready to receive the next input is called "having focus." For example, when several controls exist on the screen, the focus is designated by a box in dotted lines or by highlighting.

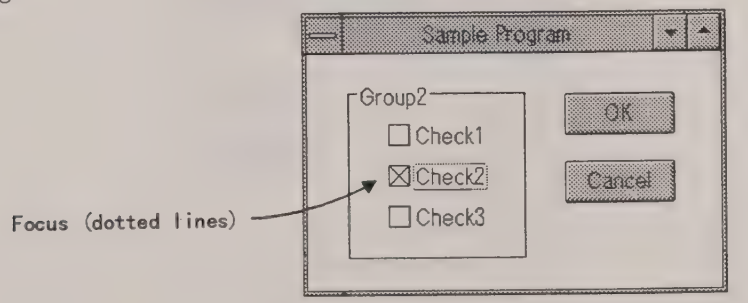

Figure 4-1 Focus at a Check Box

Note

This instrument has a touch screen, which can be operated by touching it. Touch screen operations are essentially similar to mouse operations, except that the function of the right mouse button is not supported. Think of the function of pressing the left mouse button as touching the screen surface with the touch screen pen.

Window elements

The elements of a window are shown below.

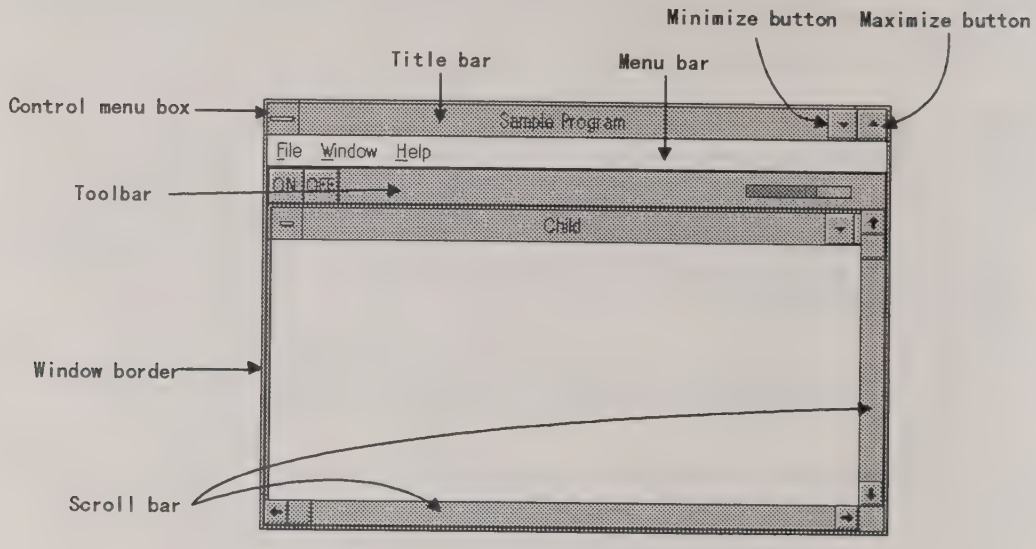

Figure 4-2 Window Elements

- Title bar
  Contains the title, control menu box, minimize button, maximize button and so on.
- Title
  Refers to the label that denotes the window function.
- Control menu box
  Double-click to close the window. Click again to open the control menu, from which the window can be maximized, minimized, and so on.

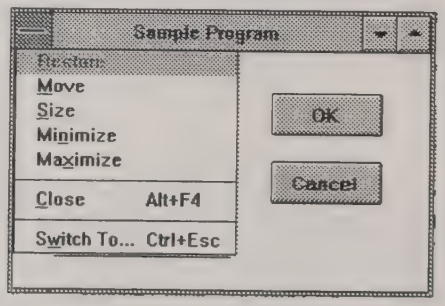

Figure 4-3 Control menu

- Minimize button
  Click to minimize the window, normally as an icon.
- Maximize button
  Click to maximize the window.
- Menu bar
  Refers to an area containing menu titles.
- Menu title
  Refers to a character string appearing on the menu bar. When you click a menu title, a dropdown menu opens. Choose a menu action from the menu and click it to execute the associated function (Figure 4-4).

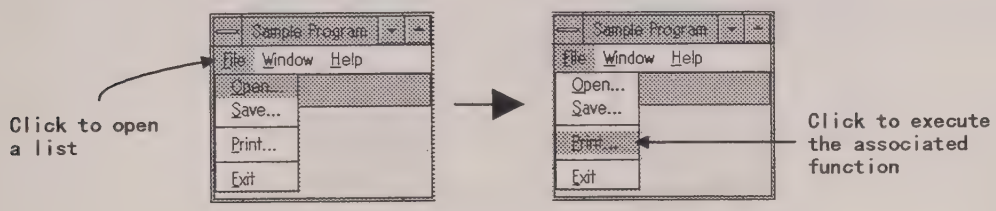

Figure 4-4 Selecting Menu Functions

Menu actions may have choices of items. When an item is selected, it is marked by a check mark (Figure 4-5).

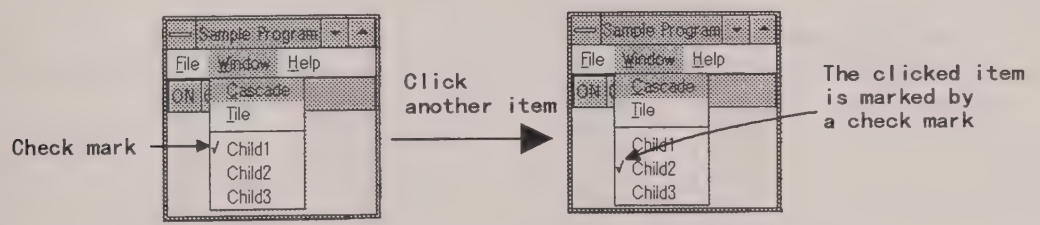

Figure 4-5 Menu with a Check Mark

- Toolbar
  Refers to an area in which frequently used functions are represented. as by buttons.
- Scroll bar
  When not all of the information on the screen can be displayed in a single display image, a scroll bar appears. Move the scroll bar to manipulate hidden information into view.
- Window border
  Refers to a boundary line for a single window.

Window manipulations

Basic window manipulations are described below.

- Minimize a window
  Click the minimize button to reduce the window to an icon.
- Maximize an icon
  To maximize an icon, point to the icon and double-click it.

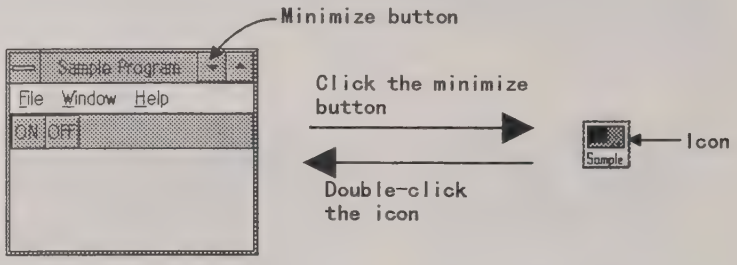

Figure 4-6 Icon and Window Displays

- To maximize a window
  Click the maximize button in the window, and the window will be enlarged to the full size of the screen. The window will also be maximized by clicking the title bar. When the window is maximized, the maximize button changes to a restore button to restore the window to its original size.
- To return a maximized window to its original size
  To return a maximized window to its original size, click the restore button or double-click the title bar.

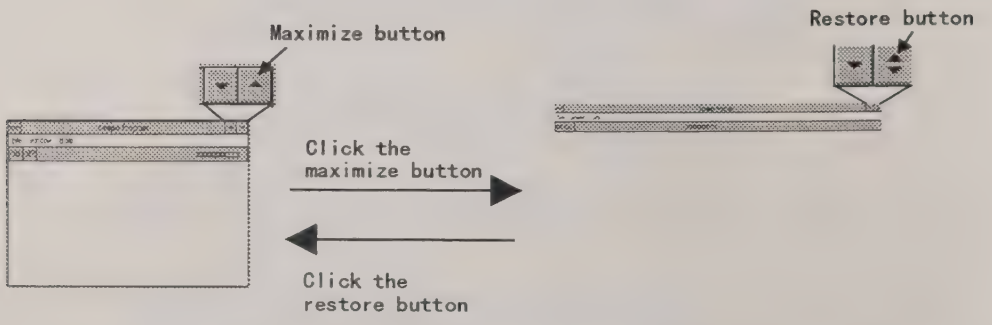

Figure 4-7 Maximize Action, and Restoring to Original Window Size

- To resize a window
  Point to a boundary of the window and an arrow will appear, permitting you to resize the window in the indicated direction. Drag the mouse while holding down the left button, releasing it when the window has changed to the desired size.

- To move the display position of a window
  Point to the title bar in the window and hold the left mouse button pressed. Then, drag the mouse to the position where you want the window placed, and release the left mouse button.

- To move the position of an icon
  Point to the icon and hold the left mouse button pressed. Then, drag the mouse to the position where you want the icon placed, and release the left mouse button.

- To move the focus from one control to the next
  To move the focus to one of the multiple controls existing in a single window, click that control. The control thus clicked will become the focus. Alternatively, press the [Tab] key, or the [Shift] + [Tab] key. The focus will move from one control to the next in the window.

Controls

The controls used with this instrument are defined below.

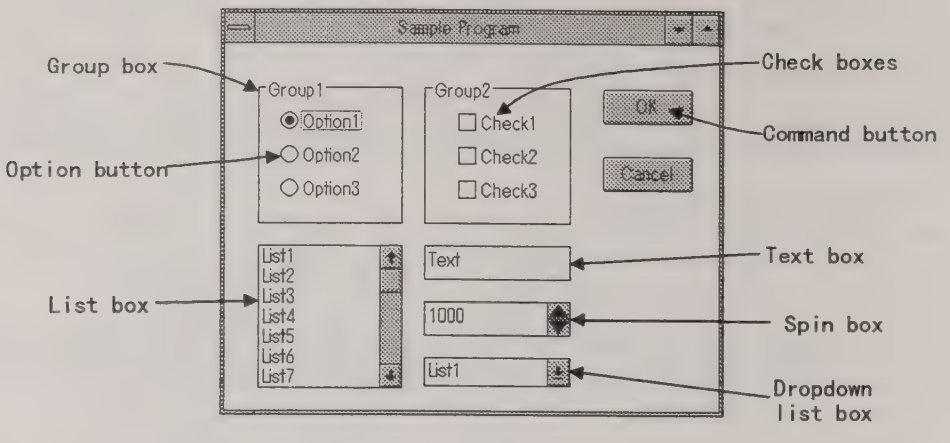

Figure 4-8 Controls

- Command button
  A rectangular button labeled with a function name. Click to execute the associated function. (This instrument also supports toggle buttons, which assume either of the two states, pressed or released, and radio buttons only one of which can be selected at a time.)
- Option button
  A round button used to select one out of a group of mutually exclusive options. When an option button is selected, it is marked by a black circle appearing in it. Normally, a set of similar options are placed in a single group box, out of which one is selected
- Check box
  A square box that is selected or cleared to turn on or off an option. When a check box is selected, it is marked by a check mark appearing in it.
- List box
  Any type of box containing a list of items available for selection. Click-select one of the items in the list. When an item is selected, it is highlighted. Two types of list boxes available are the standard list box, from which only one item can be selected, and the multiple choice list box, from which two or more can be selected.
- Dropdown list box
  Similar in function to the list box mentioned above. Usually, only the selected item is displayed. Click the arrow to display the list, then click-select one of the items in the list.
- Text box
  A rectangular box in which text can be entered or edited. Enter or edit text at the cursor in the text box.

- Spin box
  A text box with up and down arrows, used to move through a set of fixed values. Valid values may also be typed directly in the spin box using front-panel numeric keys.
- Group box
  A frame or box that encloses a set of related controls.

CHAPTER 5 DISPLAY DESCRIPTION

5.1 Kinds of Displays

This instrument has a number of setup displays and windows, which can be grouped into four broad categories according to their operation and functions. In this user's guide, these displays and windows are called by the names mentioned below.

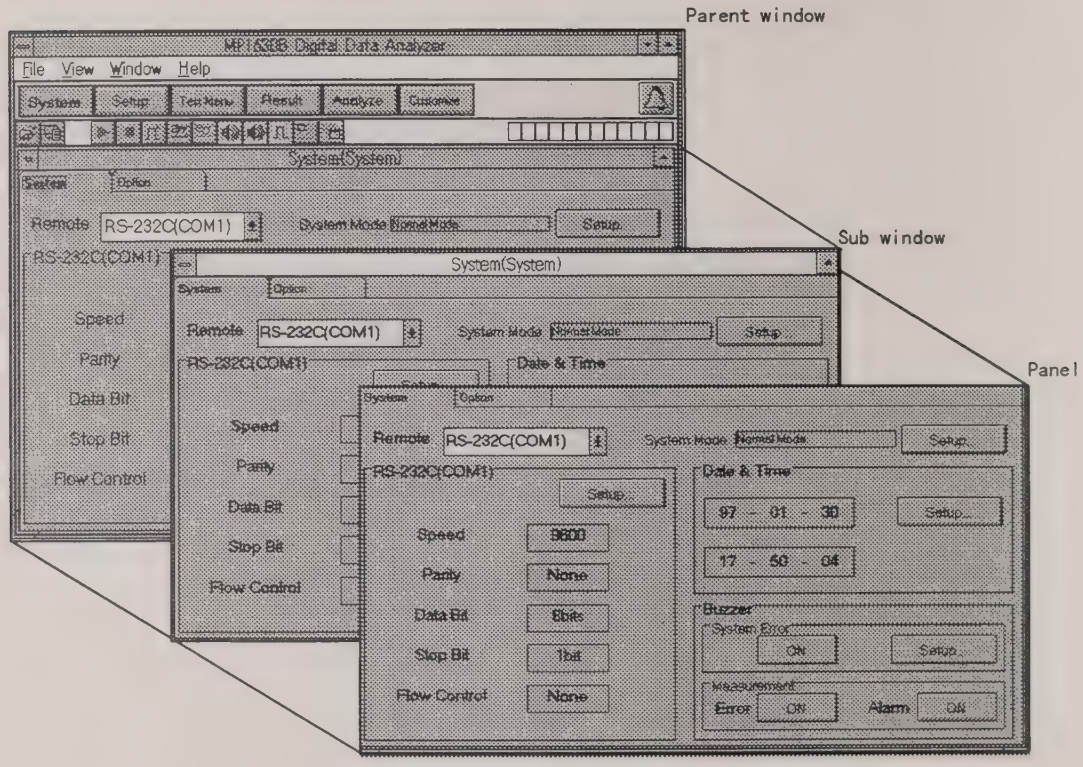

Figure 5-1 Kinds of Displays

- Parent window
  The first window that the application opens when it starts running. You can open subwindows or exit the application from the parent window.
- Subwindow
  A window that can be opened by clicking a subwindow open/close button in the parent window. Subwindows contain some panels.
- Panel
  A window that is opened by switching tabs in a subwindow. Various settings and measurement data appear on panels.

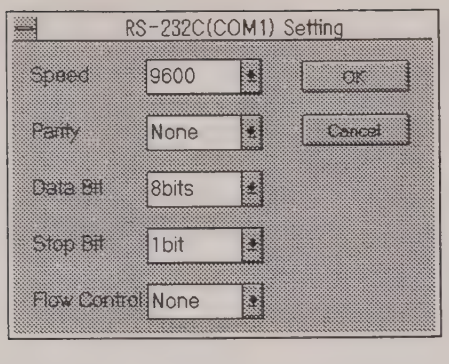

Figure 5-2 Dialog Box

- Dialog box
  A window that is opened by clicking a command button or selecting a menu on a panel. Once you open a dialog box with this instrument, you cannot operate other window unless you close it. Dialog boxes are normally used to modify settings.

5.2 Window Organization

5.2.1 Window hierarchy

The hierarchy of the parent window, subwindows, and panels supported by the instrument with a clock generator (CG), a pulse pattern generator (PPG), and an error detector (ED) unit installed in it. For descriptions of the shaded displays in the table below, refer to the MU163000A 200M Clock Generator operation manual or MU163020B 200M 16CH Pulse Pattern Generator & MU163040B 200M 16CH Error Detector operation manual.

Table 5-1 Window Hierarchy

Subwindow	Panel	Setup item
System	System	Sets the date and time, remote control functions, and system operation mode.
	Option	Displays the configuration of the units installed in the instrument.
Setup	Setup	Sets basic setup items.
	Frequency	Sets the frequency and jitter (option).
	Clock I/F	Sets the clock I/O interface.
	Data I/F	Sets the data I/O interface.
	Pattern	Sets transmitted/received patterns, bursts, and synchronization.
	AUX I/F	Sets AUX output (envelope/reset).
	Trigger I/F	Sets trigger/sync I/O signals.
Test Menu	Measurement	Sets measurement conditions.
	Error Addition	Sets error addition and delay measurement pattern insertion conditions.
	Analyze	Sets analyzer function conditions.
Result	Error/Alarm	Displays error/alarm measurement data and starts or stops measurement.
	Eye Margin	Displays eye margin measurement data and starts or stops measurement.
	Delay(Mode1)	Displays delay (mode 1) measurement data and starts or stops measurement.
	Delay(Mode2)	Displays delay (mode 2) measurement data and starts or stops measurement.
Analyze	Trace Text	Displays error/alarm measurement analyze text.
	Recall Text	Opens and displays an analyze text file.
Customize		Displays setup and error measurement data (item selection and setup by immediate value entry).

5.2.2 Organization of panel display images

This instrument can house a number of units. Setup and measurement data information is available in a unit-specific manner. Panels display setup and measurement data information in the following organizations:

- Displaying information on multiple units installed
  Information on the units inserted in slots 3 and 4 is displayed on a single panel at the same time. Unit-specific information (as on the Setup:Clock I/F panel and the Setup:Data I/F panel) may be displayed in two group boxes (Figure 5-3) or in one group box (Figure 5-4).

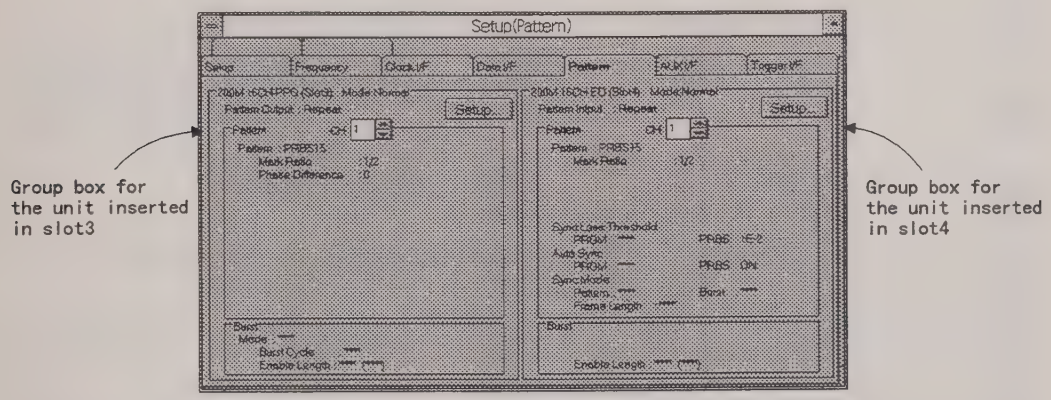

Figure 5-3 Displaying Information on Multiple Units (Unit-specific group boxes)

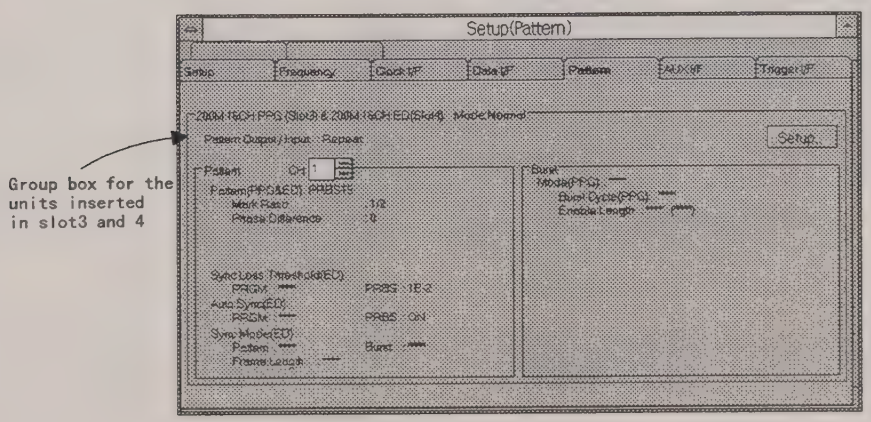

Figure 5-4 Displaying Information on Multiple Units (Common group box)

- Displaying information on a single unit and the instrument
  The Setup:Frequency panel, the Result:Eye Margin panel, the Analyze:Trace Text panel and so on each display information on one unit at a time. Unlike the organization described above, no unit-specific group boxes exist in this case.

5.2.3 Toolbar organization

This instrument provides a number of icons on the toolbar. The icons are in the form of buttons associated with frequently used functions. When buttons are pressed, their corresponding functions are executed. The table below defines the functions corresponding to the icons. Some icons are disable when PPG or ED unit is not installed in the instrument.

Button	Function	Corresponding command
	Opens a file.	Menu bar [File]-[Quick Open]
	Hard copies a display image.	Menu bar [File]-[Hard Copy]
	Starts measurement.	Result subwindow Start button
	Stops measurement.	Result subwindow Stop button
	Executes an auto search.	Result subwindow Auto Search button
	Adds a cyclic error.	Test Menu:Error Addition panel Error Add button
	Adds a single error.	Test Menu:Error Addition panel Single button
	Sets the ON/OFF status of the error beeper.	ON/OFF status setting of the System:System panel error beeper
	Sets the ON/OFF status of the alarm beeper.	ON/OFF status setting of the System:System panel alarm beeper
	Sets the ON/OFF status of all output signals, which are clock and data output from all the CHs of the PPG units inserted in slots 3.	When sets ON, all output signal sets on or off state individually depends on Out setting of the Setup:Clock I/F panel and Setup:Data I/F panel. When sets OFF, all output signals set off state unconditionally.
	Relocates windows (Tile).	Menu bar [Window]-[Tile]
	Relocates windows (Cascade).	Menu bar [Window]-[Cascade]

5.3 Opening and Closing Windows

5.3.1 Opening and closing subwindows and switching their displays

Procedures for opening and closing subwindows and switching their displays are described.

Opening and closing a subwindow

- To open a subwindow
  Click a subwindow open/close button in the parent window. The subwindow associated with the button label will open.

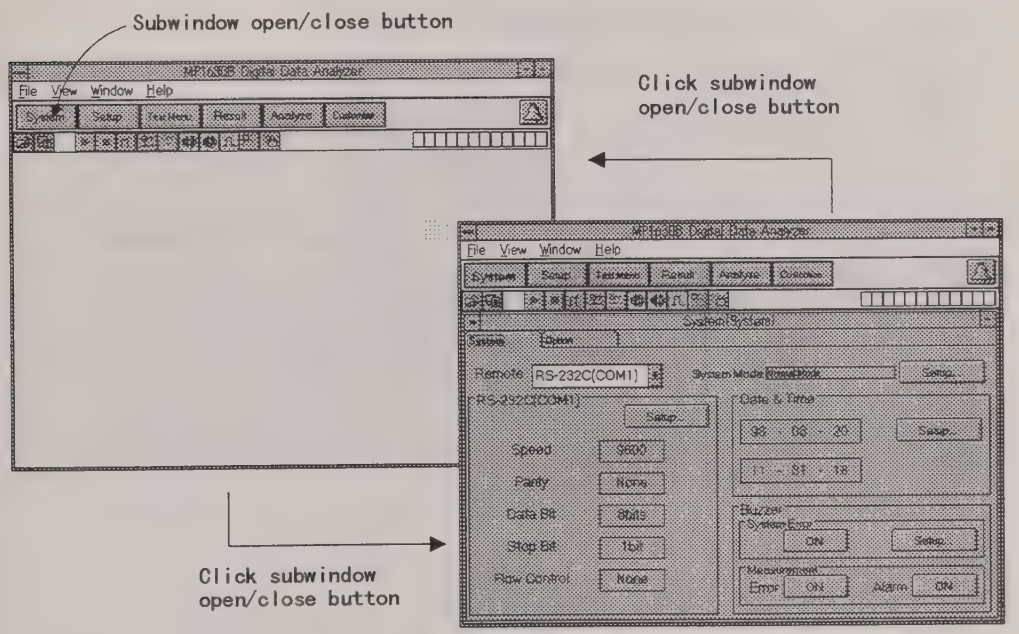

Figure 5-5 Opening and Closing a Subwindow

- To close the subwindow
  Click the subwindow open/close button again. The subwindow associated with the button label will close.

- To open multiple subwindows concurrently
  You can open multiple subwindows concurrently. Click the buttons corresponding to the subwindows to open.

Switching subwindow displays

You can maximize an open subwindow or switch its display.

- To maximize a subwindow
  Click the maximize button. The subwindow will then be maximized in the parent window.
- To return a maximized subwindow to its original size
  When a subwindow is maximized, the maximize button changes to a restore button. To return the maximized subwindow to its original size, click the restore button.

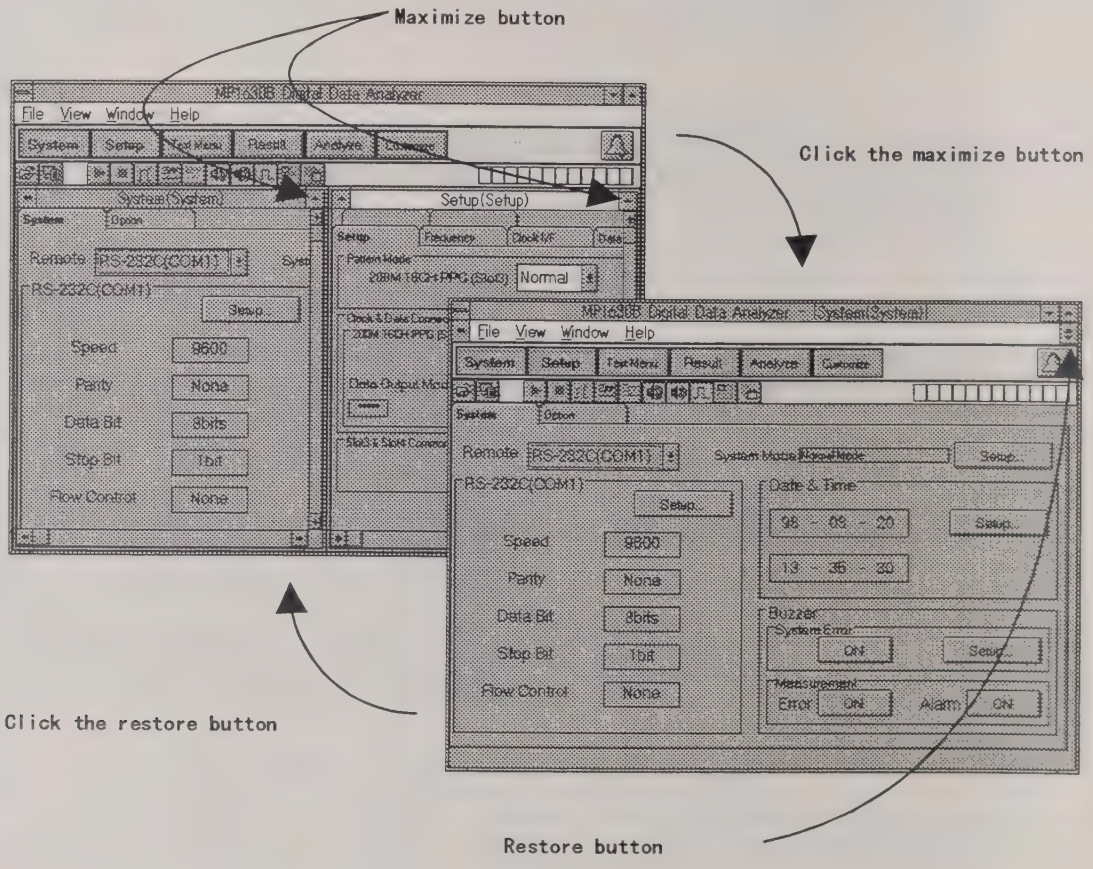

Figure 5-6 Maximizing a Subwindow

- To display open subwindows side by side
  Select [Window]-[Tile] from the parent window menu bar. Multiple open subwindows will be displayed, side by side, in the parent window.

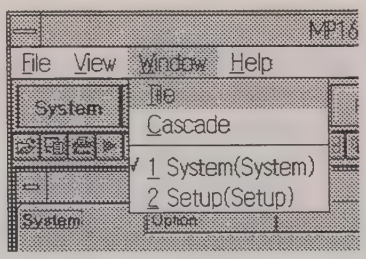

Figure 5-7 Window Menu

- To display open subwindows overlapped
  Select [Window]-[Cascade] from the parent window menu bar. Multiple open subwindows will be displayed, overlapped, in the parent window.
- To move the focus to a subwindow
  Click inside the window frame of the subwindow to which the focus is to be moved. Alternately, select [Window]-[Subwindow Name] from the parent window menu bar. The subwindow thus selected will become the focus, with its title bar being highlighted.

5.3.2 Switching panels

Subwindows contain multiple panels each. You cannot view multiple panels of a single subwindow at once.

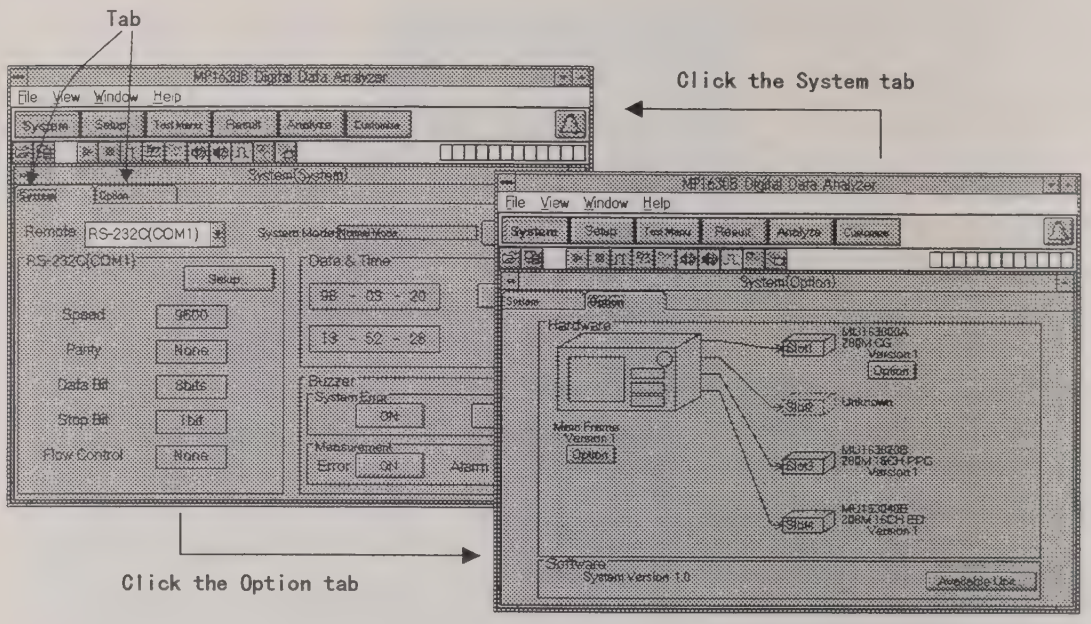

Figure 5-8 Switching Panels

- To display a hidden panel
  To display a panel hidden behind an open panel, click the tab of the panel to display. The panel thus selected will open.

5.4 Basic Setup Procedures

With this instrument, settings are normally changed by opening dialog boxes. (Some settings are changed on panels.) This section explains how to change instrument settings via dialog boxes.

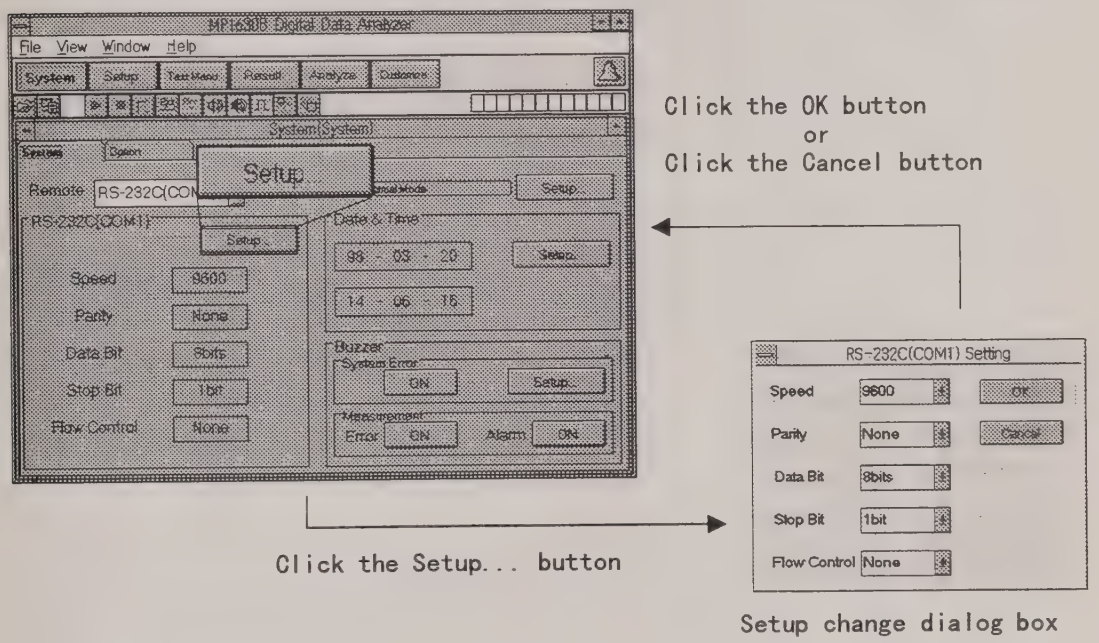

Figure 5-9 Basic Setup Procedures

1. Click the Setup button associated with the item to change. A setup change dialog box will open.
2. Change the setting in the resulting dialog box. Depending on the setup item, you may have to open another dialog box (such as Grouping Assign). At this point, the change to the setting is simply displayed and does not affect the operation of the instrument itself.
3. Click OK to close the dialog box. The change is accepted and the instrument begins functioning according to the change. To cancel the change entered in the dialog box and return to the original state, click the Cancel button when closing the dialog box.

5.5 Entering Data

With this instrument, the following methods are used to manipulate displays:

- Mouse manipulations
  You can run the application for this instrument the same way as you do Windows® applications on a personal computer.
- Touch screen manipulations
  The instrument's touch screen offers you an equivalent of the capability of the mouse. Touch it with the custom pen supplied or fingers.
- Manipulations with front-panel keys and the rotary encoder
  You can do the same with the instrument front-panel keys and the rotary encoder as you do with Windows® applications on a personal computer. In this case, certain operational differences from keyboard manipulations exist due to the limited number of keys supported by the instrument.
- Keyboard manipulation
  Connecting a keyboard to this instrument enables you to manipulate its applications using the keyboard.
- Software keyboard manipulations
  This instrument supports a software keyboard as an application program running on Windows®. Even though a keyboard is not available, the software keyboard enables you to enter characters. For instructions on how to use the software keyboard, see section5.6 "Using Software Keyboard".

Procedures for entering data are described below, along with operational differences, with primary regard to the usage of the front-panel keys and the rotary encoder.

Moving from one control to the next in a window

Where multiple controls exist in a single window, you can move the focus from one control to the next in the following ways:

- [Tab] key
  Moves the focus from the control placed at the upper left corner of the window to the right.
- [Shift] + [Tab] key
  Moves the focus in the direction opposite to the [Tab] key.

Manipulating windows

You can use panel keys to resize, move, and otherwise manipulate windows.

1. Click the control box in the window to manipulate, to open the control menu.
2. Using the [↑] and [↓], and [Enter] keys, select the window manipulation function to execute from the control box.
3. Manipulate the window with [↑], [↓], [→], and [←] to suit the function selected.
4. Press the [Enter] key to accept the change to the window.

Note

You can also open a control box by pressing [Shift] + [-].

Entering data with spin boxes

You can use spin boxes and the rotary encoder to enter numeric values.

1. Move the focus to the spin box to manipulate. When the spin box becomes the focus, a digit of the numeric value is highlighted.
2. Select the digit to change by moving the highlighted cursor, in either of the following ways:
   - [Press the [←] and [→] keys (on the rotary encoder).
   - Click the digit.
3. Change the numeric value. You can change the numeric value continuously with respect to the digit at the highlighted cursor in one of the following ways:
   - Click the spin button.
   - Turn the rotary encoder.
   - Press the [↑] and [↓] keys (on the rotary encoder).
4. You can also enter a numeric value directly with numeric keys. In this case, the current setting on display is entirely cleared regardless of the highlighted cursor position. The display is cleared entirely if you press the [BS] key before accepting the input data.
5. When you have changed a numeric value directly with numeric keys, press the unit key or the [Enter] key to accept the input data. The setting will be canceled when you do one of the following before pressing the unit key or the [Enter] key to accept the input:
   - Move the focus to another control.
   - Close the dialog box.
   - Move to another application.

Note

When a spin box is on a panel (in the Customize subwindow), you need to enable spin box entry by clicking the text entry enable button before changing the numeric value. The pilot lamp is on while the entry is enabled.

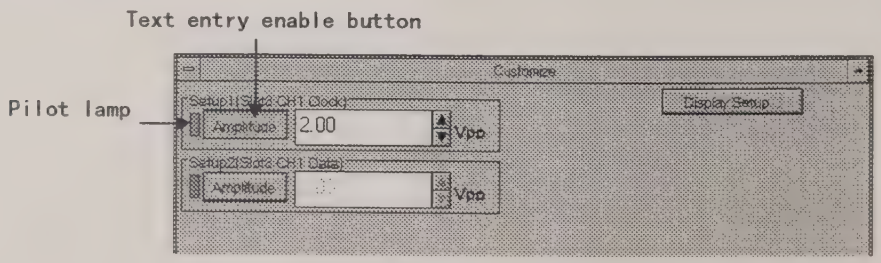

Figure 5-10 Spin Box on a Panel

Using controls

To manipulate controls with panel keys, follow these steps.

- **Command button manipulations**
  1. Move the focus to the command button.
  2. Press the [Enter] key. The function associated with the button is executed.

- **Dropdown list boxes**
  1. Move the focus to the dropdown list box to be altered.
  2. Press the [Shift] + [Enter] keys. A list will open.
  3. Select a list option by pressing the [↑], [↓], [→], and [←] keys on the rotary encoder.
  4. Press the [Enter] key to close the list and accept the input data.

- **List boxes**
  1. Move the focus to the list box to be altered.
  2. Move the focus to the desired option by pressing the [↑], [↓], [→], and [←] keys on the rotary encoder.
  3. Press the [Shift] + [Enter] keys to toggle between the selected and not selected states.

- **Option buttons.**
  1. Move the focus to the group box to be altered.
  2. Move the focus by pressing [↑], [↓], [→], and [←]. The option button of the item at the focus will turn on.

- **Check boxes**
  1. Move the focus to the group box containing the check box to be altered.
  2. Move the focus to the desired option by pressing [↑], [↓], [→], and [←].
  3. Press the [Shift] + [Enter] keys to toggle between the selected and not selected states.

5.6 Using Software Keyboard

5.6.1 Character Input

The front panel of the MP1630B provides only the strict minimum of keys for numerical input. Therefore, a software keyboard is provided as an auxiliary function for character input. The software keyboard allows character input even when no keyboard is connected to the MP1630B.

The following example explains how to use the software keyboard to input a file name in the Save dialog box.

1. Execute [File]-[Save] from the parent window to open the Save dialog box.
2. Click the virkey.icon in the [MP1630B] group in Program Manager. This starts the software keyboard.
3. Click the text box where you want to input characters (in this case, the File Name text box), and click keys on the software keyboard. The characters you click are input in the text box.

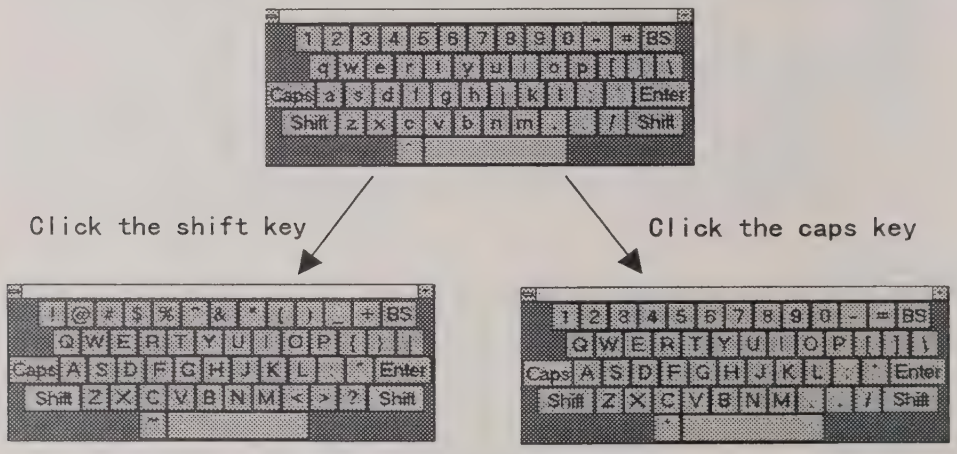

Figure 5-11 Software Keyboard

4. To close the software keyboard, open the control box at the top left of the software keyboard, and select [Exit].

Note

The software keyboard performs character input to the control that is currently selected (controls for which text input is enabled, such as text boxes and spin boxes). In addition to the File Name text box used in the above example, numerical input can also be performed in controls such as spin boxes and the Windows® Notepad.

5.6.2 Setting the software keyboard

The size and display format of the software keyboard provided with the MP1630B can be changed to suit each usage condition.

- Changing the size
  Click the button at the top left of the software keyboard to open the control box. Click SIZE in the menu, and select a size among SS, S, M, L, and LL. A check mark will appear next to the selected size.

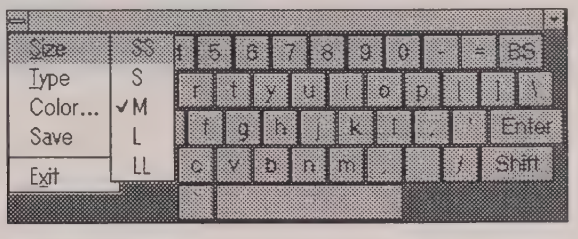

Figure 5-12 Changing size

- Changing the display format
  Click the button at the top left of the software keyboard to open the control box. Click TYPE in the menu and select one among Full-Key, 10-Key, and 16-Key. A check mark will appear next to the selected format.

Full-Key	All keys can be used.
10-Key	Only numerical keys can be used.
16-Key	Only numerical keys and character keys (A to F) can be used.

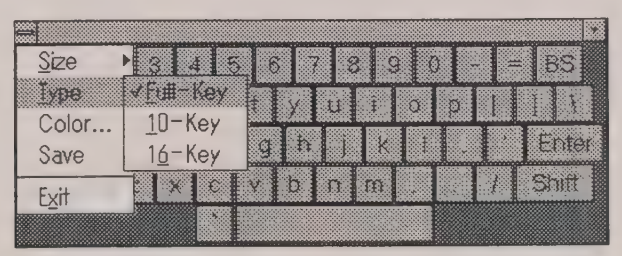

Figure 5-13 Changing display format

- Changing the background color
  Click the button at the top left of the software keyboard to open the control box. Click Color in the menu and select your favorite color among background displayed.

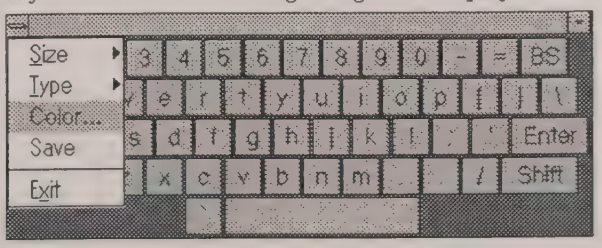

Figure 5-14 Changing the background color

- Saving setup data
  Click the button at the top left of the software keyboard to open the control box. When click Save in the menu, current setup data is saved.

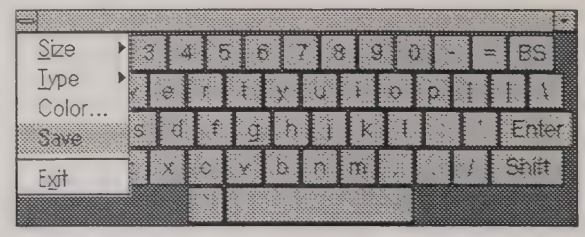

Figure 5-15 Saving setup data

CHAPTER 6 OPERATING INSTRUCTIONS

6.1 Touch Screen Calibration

This instrument allows you to carry out display operations via the touch screen. The touch screen requires preliminary adjustment to ensure that the location of the display surface touched will be correctly transmitted to the software. To adjust the touch screen, follow these steps:

1. Double-click the TTSetup3.20 icon in the program manager Main group. The touch screen setup application will start running.
2. Run [Calibrate] from the touch screen setup application menu bar. Calibrate the touch screen as directed by the screen guidance.
3. Calibration is now complete. Select [Exit] from the menu bar. The touch screen setup application will terminate.

Note

Do not execute any touch screen setup application other than [Calibrate]. Successful functioning of the touch screen could be disabled if its setting is altered by executing such other functions.

6.2 Saving and Opening Setup Data

6.2.1 Saving setup data

With this instrument, you can save setup data or measurement data to floppy disks or hard disks. There are two ways to save setup data as follows:

- Quick Save
  This function saves multiple records of data, such as instrument setup data and unit-specific setup data, all at once. It is used to save the complete set of data at once by viewing it as an integrated environment for the instrument.
- Save
  This function saves multiple records of data, such as instrument setup data and unit-specific setup data, one at a time. It is used to save selected records of data.

Note

While this instrument supports two hard disk drives C and D, drive D is dedicated to virtual memory and is not accessible to users. Drive C would not be available for saving data, either, when system operations have been set in the measurement power fail mode. For more details on system operations, see section6.4 "Setting System Operations".

Quick Save procedure

1. Select [File]-[Quick Save] from the parent window menu bar. The Quick Save dialog box will open.

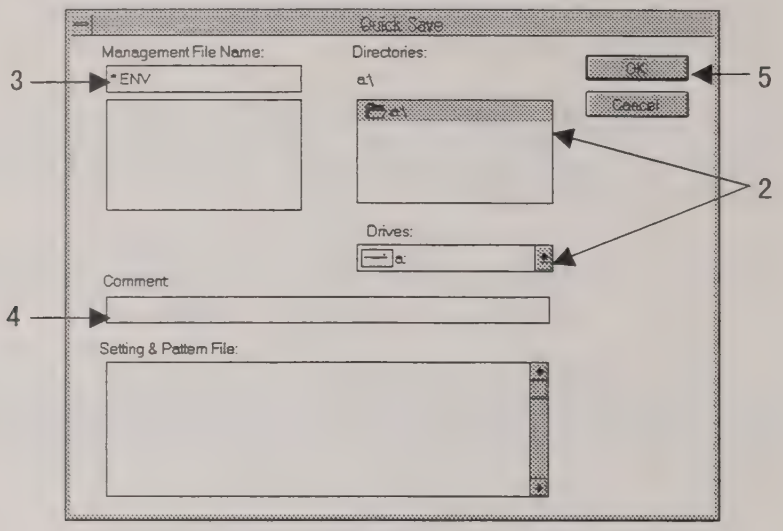

Figure 6-1 Quick Save Dialog Box

2. Using the Directories and Drives controls, select the directory and drive in which to save an environmental file.
3. Type the filename of the environmental file to save in the Management File Name text box with seven or fewer characters.

Note

Environmental filenames may not be longer than seven characters. Inconveniences might result if this length limit is exceeded.

4. You can type a comment of up to 60 characters in the Comment text box to document the environment saved. A character string giving a summarized description of the environment is recommended as a comment to facilitate ready verification of the data.
5. The setup procedure is now complete. Click OK to save the data. The environmental file thus saved is given the extension .ENV.

Note

This function creates various data files (with extensions, such as .FRM, .CLK, and .PPG) at the same time as it creates a single environmental file (.ENV). The filenames of these data files are the filename of the environmental file with its extension changed to suit the kind of data. They are created in the same directory as the environmental file. The files that are created concurrently with the environmental file are listed in the Setting & Pattern File: list.

Save procedure

1. Select [File]-[Save] from the parent window menu bar. The Save dialog box will open.

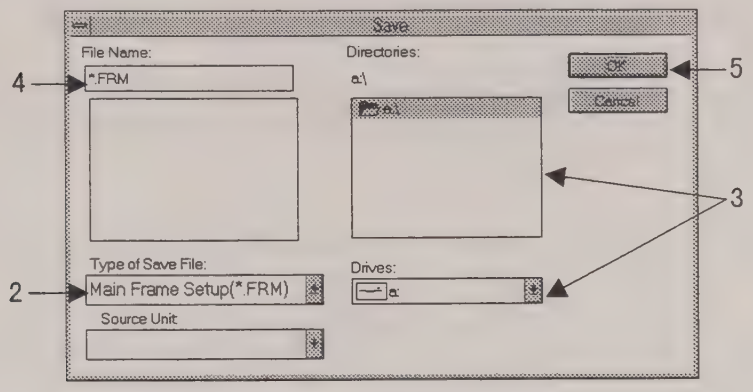

Figure 6-2 Save Dialog Box

2. Select the type of file to save from the Type of Save File dropdown list box.

Main Frame Setup(*.FRM)	Saves instrument (mainframe) setup data. Only this item can be selected if no unit has been installed.

3. Using the Directories and Drives controls, select the directory and drive in which to save a file.
4. Type the filename of the file to save in the File Name text box with eight or fewer characters.
5. The setup procedure is now complete. Click OK to save the data. The file thus saved is given the extension .FRM.

6.2.2 Opening setup data

With this instrument, you can open setup data or measurement data from floppy disks or hard disks. There are two ways to open setup data as follows:

- Quick Open
  This function opens multiple records of data, such as instrument setup data and unit-specific setup data, all at once. It is used to open the complete set of data at once by viewing it as an integrated environment for the instrument.
- Open
  This function opens multiple records of data, such as instrument setup data and unit-specific setup data, one at a time. It is used to open selected records of data.

Note

While this instrument supports two hard disk drives C and D, drive D is dedicated to virtual memory and is not accessible to users. Drive C is available for opening data at all times.

Quick Open procedure

1. Select [File]-[Quick Open] from the parent window menu bar. The Quick Open dialog box will open.

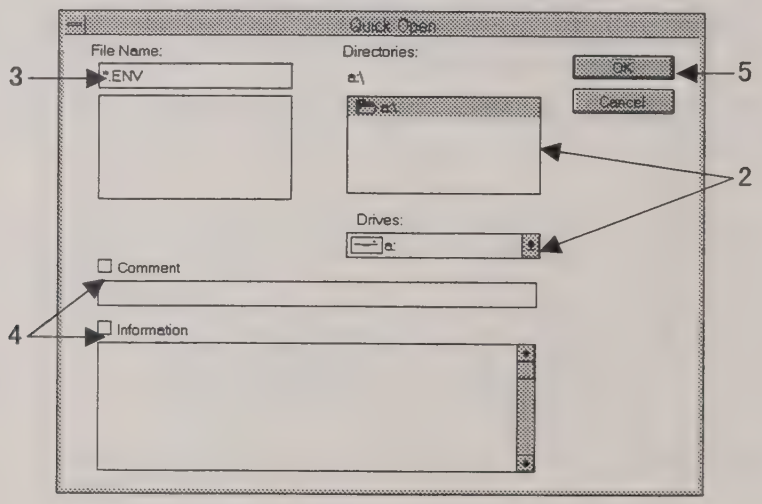

Figure 6-3 Quick Open Dialog Box

2. Using the Directories and Drives controls, select the directory and drive in which the environmental file to open is stored.
3. Select the filename of the environmental file to open from the File Name list box.
4. You may check the Comment check box to read the comment on the environmental file selected, or check the Information check box to view the filenames of the various files managed by the environmental file created.
5. The setup procedure is now complete. Click OK to open the data.

Open procedure

1. Select [File]-[Open] from the parent window menu bar. The Open dialog box will open.

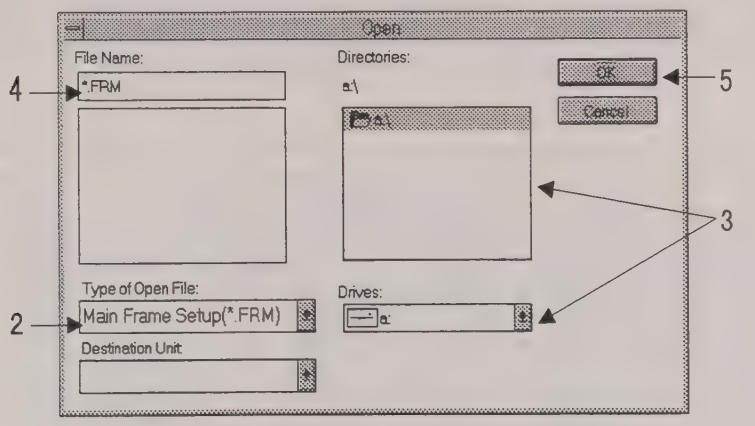

Figure 6-4 Open Dialog Box

2. Select the type of file to open from the Type of Open File dropdown list box.

Mainframe Setup(*.FRM)	Reads instrument (mainframe) setup data. Only this item can be selected if no unit has been installed.

3. Using the Directories and Drives controls, select the directory and drive in which the file to open is stored.
4. Select the filename of the file to open from the File Name list box.
5. The setup procedure is now complete. Click OK to open the data.

6.2.3 Manipulating files

Data written to floppy disks or hard disks can be manipulated from the file manager. The file manager provides functions for deleting, moving, copying, and otherwise manipulating files. For more detailed procedural information, see the help files for file manager.

Note

1. You may change filenames with the file manager, but not the extensions. Files could become inaccessible for opening if their extensions are altered.
2. Files managed in the environmental file (one specified at Quick Open/Quick Save) could become inaccessible for opening at Quick Open if their filenames are altered.
3. To provide against possible damage to the hard disks, periodic backups of the stored data are recommended.

6.3 Choosing Remote Control

6.3.1 Choosing remote control interfaces

The instrument supports RS-232C, and GPIB (option),ETHERNET(option) as remote control interfaces. Setup procedures for using these interfaces are described.

1. Open the System:System panel.

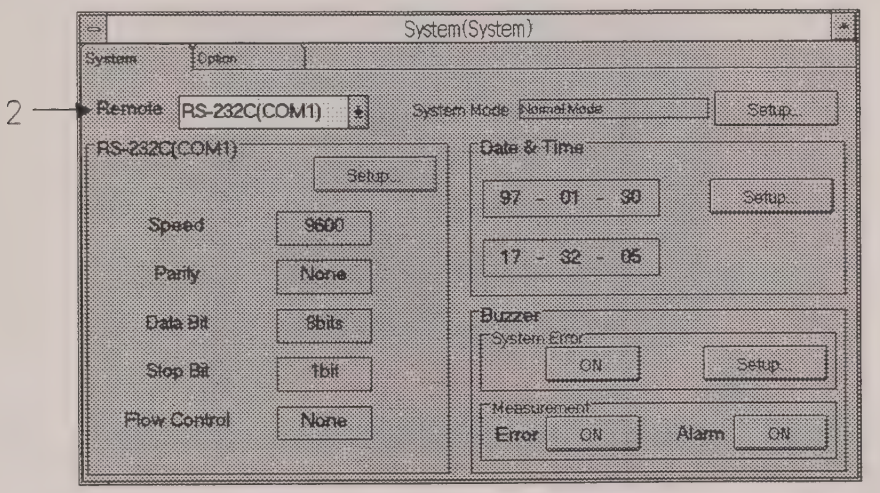

Figure 6-5 System:System Panel

2. Select the type of interface to use from the Remote dropdown list box.

RS-232C(COM1)	Selects the RS-232C remote control interface.
GPIB	Selects the GPIB remote control interface, only if OPT-01 (GPIB option) has been installed.
ETHERNET	Selects the ETHERNET remote control interface, only if OPT-02 (ETHERNET option) has been installed.
None	Does not use a remote control interface.

3. The setup procedure for using a remote control interface is now complete. For more interface details refer to the subsections that follow.

6.3.2 Setting RS-232C

Procedures for selecting the RS-232C remote control interface are explained below.

1. Select RS-232C (COM1) from the Remote dropdown list, and the RS-232C (COM1) group box will open on the System:System panel.
2. Click the Setup button in the group box. The RS-232C (COM1) dialog box will open.

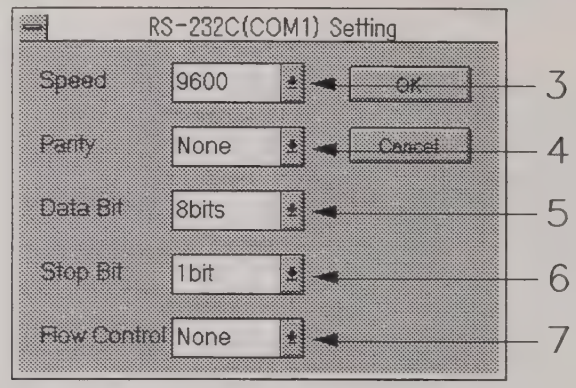

Figure 6-6 RS-232C (COM1) Dialog Box

3. Set the transmission speed by selecting it from the Speed dropdown list box.

110	Sets 110 bps.
300	Sets 300 bps
600	Sets 600 bps.
1200	Sets 1200 bps.
2400	Sets 2400 bps.
4800	Sets 4800 bps.
9600	Sets 9600 bps.
19200	Sets 19,200 bps

4. Set the kind of parity by selecting it from the Parity dropdown list box.

None	None
Even	Even parity
Odd	Odd parity

5. Set the transmission character length in bits by selecting it from the Data Bit dropdown list box.

8bits	Sets 8 bits.
7bits	Sets 7 bits.

6. Set the stop bit length by selecting it from the Stop Bit dropdown list box.

2bits	Sets 2 bits.
1bit	Sets 1 bit.

7. Sets the method of flow control by selecting it from the Flow Control dropdown list box.

Xon/Xoff	Implements flow control using the Xon/Xoff characters, in addition to the RS-232C control line.
Hardware	Implements flow control using the RS-232C control line.
None	Do not implement flow control.

8. The RS-232C setup procedure is now complete. Click OK to enable the settings.

6.3.3 Setting GPIB

Procedures for selecting the GPIB remote control interface are explained below.

1. Select GPIB from the Remote dropdown list, and the GPIB group will open on the System:System panel.
2. Click the Setup button in the group box. The GPIB dialog box will open.

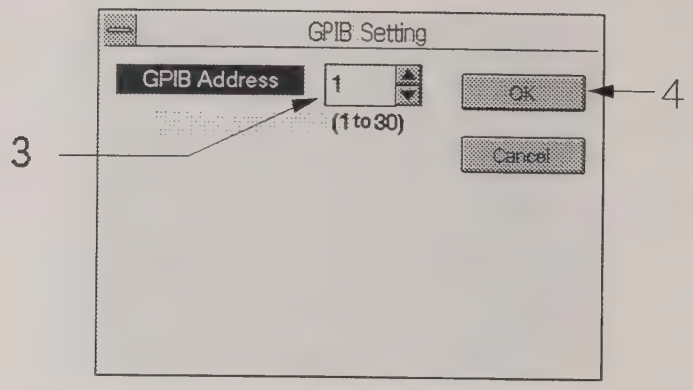

Figure 6-7 GPIB Dialog Box

3. Set the GPIB address of the instrument. Specify a valid address in the GPIB Address spin box.

0 to 30:Step 1:

4. The GPIB setup procedure is now complete. Click OK to enable the settings.

6.3.4 Setting ETHERNET

There is no setup items, when you use Ethernet as remote control interface.
For descriptions of Ethernet, refer to the Ethernet Option operation manual.

6.4 Setting System Operations

This instrument can be toggled between the system mode in which power failure measurement is enabled and that in which power failure measurement is disabled.

1. Open the System:System panel.

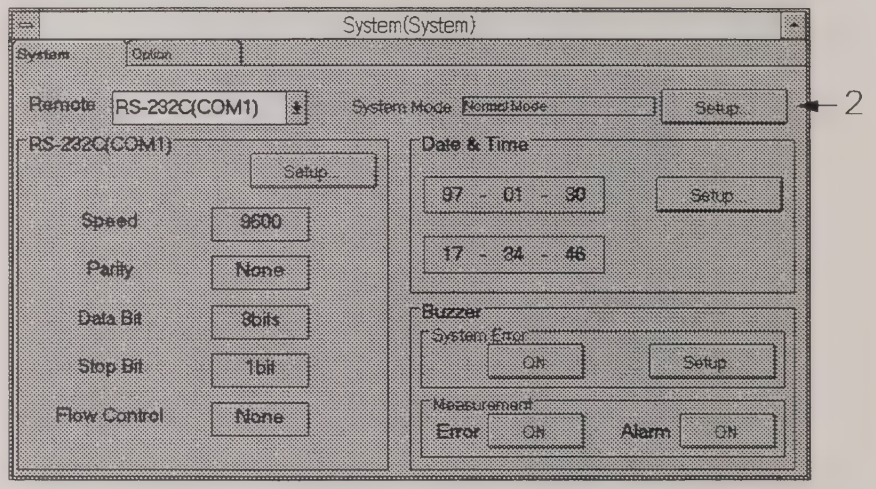

Figure 6-8 System:System Panel

2. Click the Setup button next to the System Mode label in the System panel. The System Mode dialog box will open.

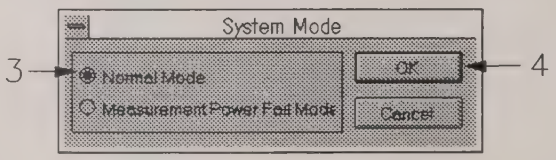

Figure 6-9 System Mode Dialog Box

3. Set the system operation by selecting it with an option button.

Normal Mode	Puts the system into the mode in which power failure measurement is disabled.
Measurement Power Fail Mode	Puts the system into the mode in which power failure measurement is enabled.

Note

In these modes the following functions are operable or inoperable:

Function	Normal Mode	Measurement Power Fail Mode
Power failure measurement	×	○
Data saving to hard disks	○	×
PRGM pattern editing/printing with the pattern editor	○	×
Analyze data recall	○	×

○ : Operable × : Inoperable

4. The setup procedure is now complete. Click OK to enable the setting.

Note

An alteration to this setting in turn alters the setting of Microsoft® Windows® Operating System, requiring it to be rebooted. A warning message appears before the system is rebooted.

⚠ CAUTION

1. The application may access the hard disk to run when the instrument is in the normal mode. Damage to the hard disk might result, therefore, if the application is stopped without following the regular shutdown procedure, as by turning off the front-panel power switch. To protect the hard disk, follow the routines suggested in section4.1 "Starting and Stopping the MP1630B" to stop the instrument in the normal mode.
2. In an erratic power environment prone to power failures, you should use this instrument in the normal mode to safeguard the hard disk.

6.5 Setting Date and Time

This section explains how to set the date and time for this instrument.

1. Open the System:System panel.

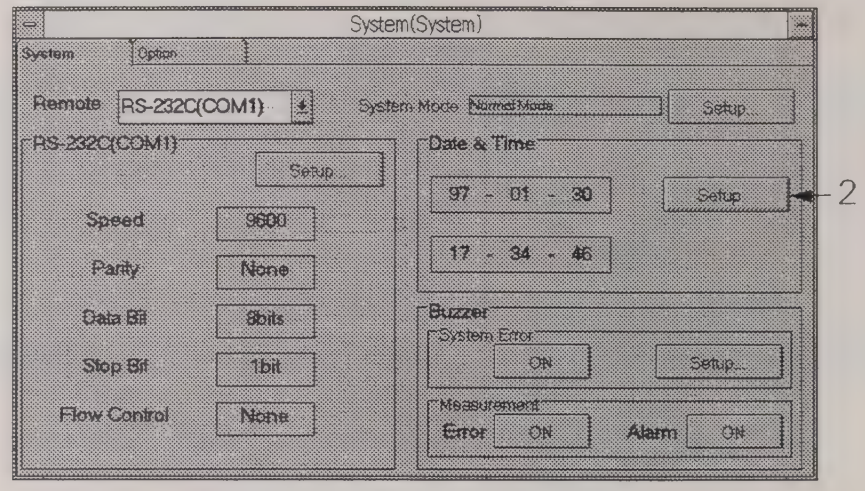

Figure 6-10 System:System Panel

2. Click Setup in the System Panel Date & Time group box. The Date & Time dialog box will open.

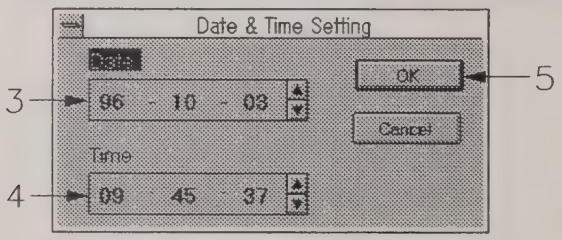

Figure 6-11 Date & Time Dialog Box

3. Set the date by entering into the Date spin box. The date will appear in year-month-day format.

0 to 99:Step 1:	Sets the lower two digits of the year between 1996 and 2037.
1 to 12:Step 1:	Sets from January to December.
1 to 31:Step 1:	Sets the first to 31st.

4. Set the time by entering into the Time spin box. The time will appear in hour-minute-second format.

0 to 23:Step 1:	Sets from 0 to 23 hours.
0 to 59:Step 1:	Sets from 0 to 59 minutes.
0 to 59:Step 1:	Sets from 0 to 59 seconds.

5. The setup procedure is now complete. Click OK to enable the settings.

Note

This instrument has an IC to manage the measurement reference time. The instrument, when started up, makes the time data retained by the IC meaningful to the application and hardware.

You can set the date and time by using the Windows® functions even while the instrument control application is not running, but the date and time thus set would not be reflected in the time management IC in the instrument. Consequently, two different records of time data would result, the time data altered with Windows® and the time data retained by the time management IC.

If the instrument is started in this condition, the time data retained by the IC would take effect, with the result of the date and time altered with Windows® being reset to their pre-alteration status (date and time retained by the IC).

To avoid this inconvenience, you should use the application's System:System panel to make alterations to the date and time.

6.6 Setting Buzzer

This section explains how to set the ON or OFF of buzzer for this instrument.

1. Open the System:System panel.

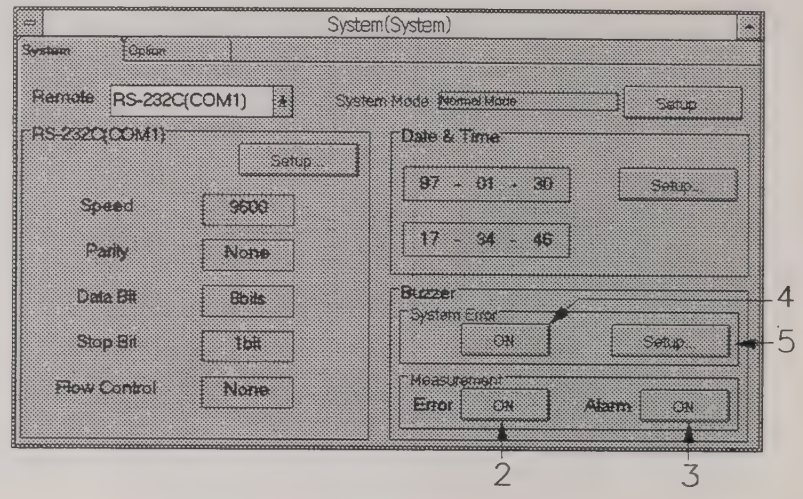

Figure 6-12 System:System パネル

2. Click Error button when require sound on error. Each click changes displayed of "ON" or "OFF".
3. Click Alarm button when require sound on Alarm. Each click changes displayed of "ON" or "OFF".
4. Click button(shown on No.4) when require sound on System error. Each click changes displayed of "ON" or "OFF".
5. Individual setup is available for the system error. Click Setup button to open the System Error Buzzer dialog.

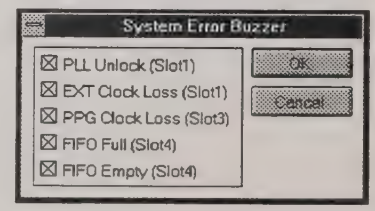

Figure 6-13 System Error Buzzer dialog

6. Check the box which require sound when error occurred. Off the check from item(s) which does not require sound when error occur. Click OK to enable the settings.

Explanation on each System Error;

(PLL Unlock)

The lock of the PLL circuit inside the CG unit unlocked.

(EXT Clock Loss)

External clock signal in correctly input to EXT Clock Input connector of the rear panel of the CG unit.

(PPG Clock Loss)

Clock signal incorrectly input to CLK Input connector of the rear panel of the PPG unit.

(ED Clock Loss)

Clock signal incorrectly input to CLK Input connector of the rear panel of the ED unit.

(FIFO Empty · FIFO Full)

Different frequency of two clock signals; (1)Clock Input connector of the front panel and (2)CLK Input connector of rear the panel of the ED unit, will cause this error.

When (2) is higher than (1) "Empty" will be displayed. Conversely, when (2) is lower than (1) , "Full" will be displayed.

6.7 Confirmnation of the System Error(s)

When System Error(s) , explained in 6.6 , occurred, the "Bell button" will be displayed in subwindow on the right of Open/Close button, seen below:

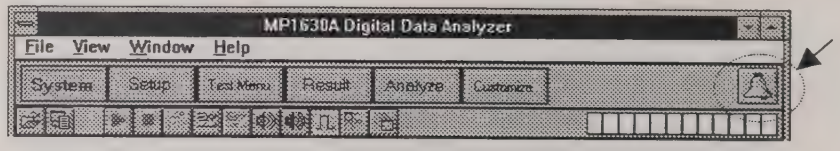

Figure 6-14 Bell button

Click "Bell button" to identify the System Error(s) in occurrence.

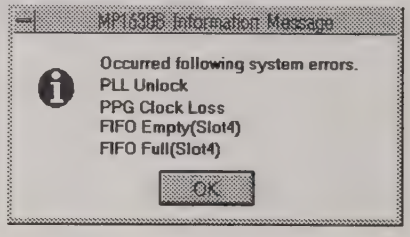

Figure 6-15 Occurred System Error(s) displayed dialog box

6.8 Viewing the Configuration of Units Inserted in the MP1630B

A panel lets you view the hardware system configuration and the software configuration of the instrument. It displays the following kinds of information:

- Hardware system configuration
  - Kinds of units inserted in slots 1 to 4
  - Availability of options for each unit
  - Availability of options for the mainframe
- Software configuration
  - Software version number
  - Units and options that can be controlled with current version software

1. Open the System:Option panel.

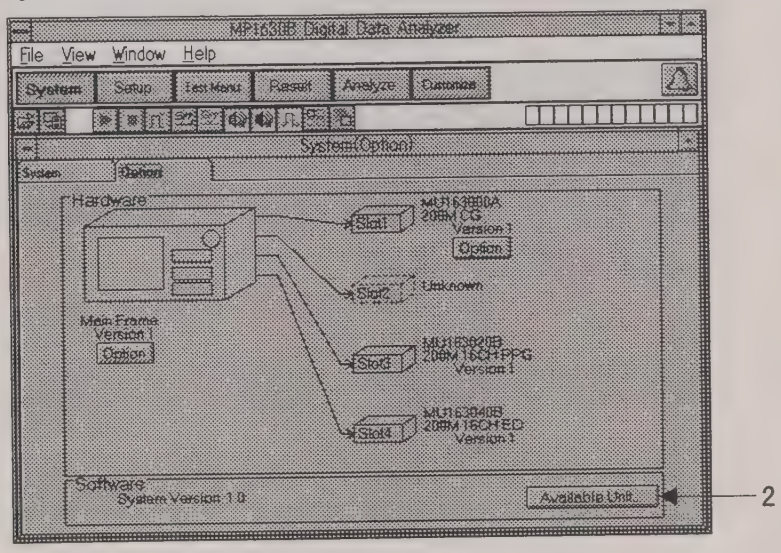

Figure 6-16 System:Option Panel

2. The hardware system configuration and the software configuration of the instrument are displayed. When no unit or an unit uncontrollable by the current System software is inserted, a diagram shown a slot will be displayed with dot line. Click Available Unit in the Software group box, and the Available Unit dialog box opens, giving you a look at the units and options that an be controlled with the present control application. Click OK to close this dialog box.

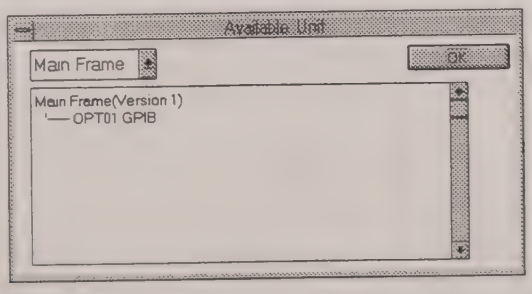

Figure 6-17 Available Unit Dialog Box

3. Click the Option button for the mainframe or units and a dropdown list opens under the button, showing a list of options installed.

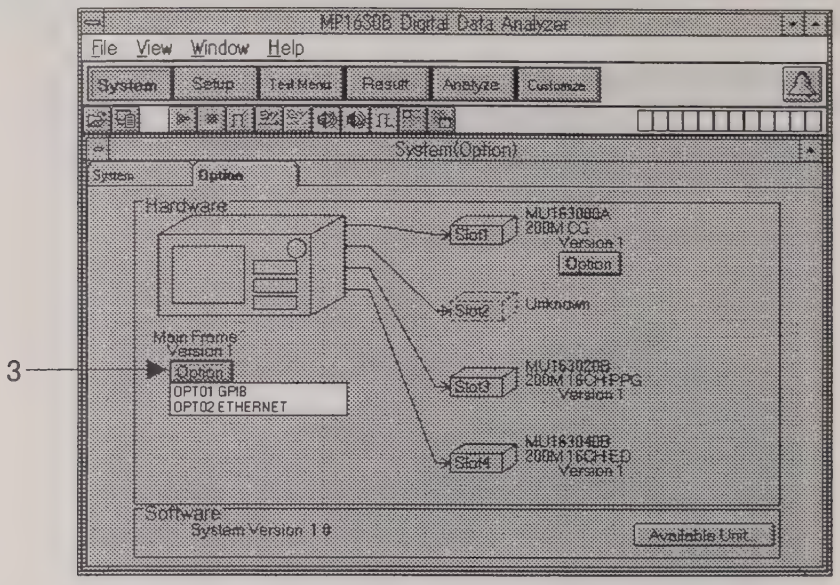

Figure 6-18 Option Dropdown List

6.9 Printing Out Display Images

This instrument permits hard-copying display images to a printer.

1. Before carrying out a hard-copy operation, you need to set up the printer. Select [File]-[Printer Setup] from the parent window menu bar. The Printer Setup dialog box will open.

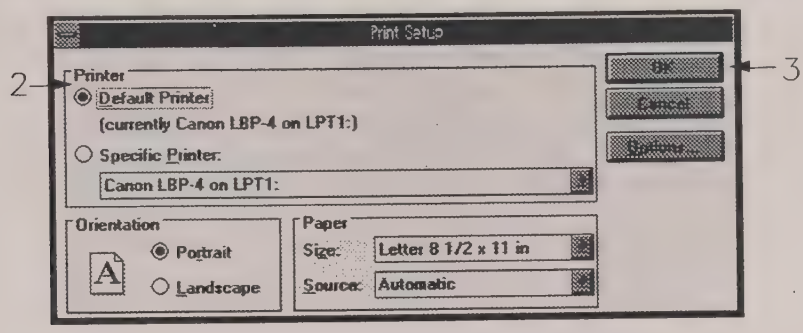

Figure 6-19 Printer Setup Dialog Box

2. Set up the printer to suit the kind of printer connected to the instrument.
3. When the setup procedure is complete, click OK to enable the setting.
4. Open the display image to hard-copy. Select [File]-[Hard Copy] from the parent window menu bar. The display image will be hard-copied to the printer connected.

Note

When use printer, advance setup of the printer is required. Refer to 3.2.2 Connecting peripherals for detail.

6.10 Resetting to Factory Defaults

This instrument can be reset to its factory defaults by initializing its setup status and measurement data.

1. Select [File]-[Initialize] from the parent window menu bar.
2. The instrument is reset to its factory defaults. Before initialization begins, a warning message is displayed asking if you really want to initialize the instrument or cancel the initialization.

Note

This function initializes the setup status and measurement data in the instrument, but not its remote control settings. For the factory defaults of the individual functions see Appendix A, "Display-specific Setup Items."

6.11 Recovering Software

This instrument is controlled by Microsoft® MS-DOS® Operating System, Microsoft® Windows® Operating System, and other applications. The instrument may fail to work correctly if the HDD fails or any part of the software is corrupted by invalid file manipulations.

If this happens, you need to carry out software recovery by using the recovery tool supplied with the instrument.

Note

1. Before proceeding with software recovery, connect an external keyboard to the instrument.
2. All the data stored on the hard disk would be lost if software recovery is carried out. You should keep backup copies of the setup data and measurement data stored on the hard disk beforehand.
3. Do not run the recovery tool on any machine (such as a personal computer) other than this instrument. This act constitutes a violation of the software usage obligations.

Recovery tool configuration

The recovery tool is designed to recover the system software, and control and other applications. It provides the following two functions:

1. System software recovery(Attached Recovery DISK)
   The recovery tool recovers the system software. It also makes the LEDs, rotary encoders, panel keys, touch screen, and software keyboard operable.
2. Application recovery(Attached Application DISK)
   The recovery tool recovers the control application.

Recovery preparations

Complete the following preparations before beginning software recovery:

1. Connect an external keyboard to the instrument.
   The execution of the recovery software requires an external keyboard to be connected to the keyboard. Connect a keyboard to the rear-panel keyboard connector.

2. Enable booting from the floppy disk at power-on time.
   This instrument is normally programmed to boot software from the hard disk when it is turned on. To carry out recovery, it is necessary to insert the recovery disk into the floppy disk drive and then start the recovery tool from that disk. To enable booting from the floppy disk at power-on time, do the following:

   ① Turn on the power. When it beeps, press the S key (letter S) while holding down the Ctrl and Alt keys. The setup window will open.

   ② Point to the Quick Boot position on the screen. The current setting is Enabled (booting from the hard disk). Using the + and - keys, change it to Disabled (booting from the floppy disk).

   Note

   Do not change any setting other than Quick Boot. Turning off the power will reset the setup window to its initial status.

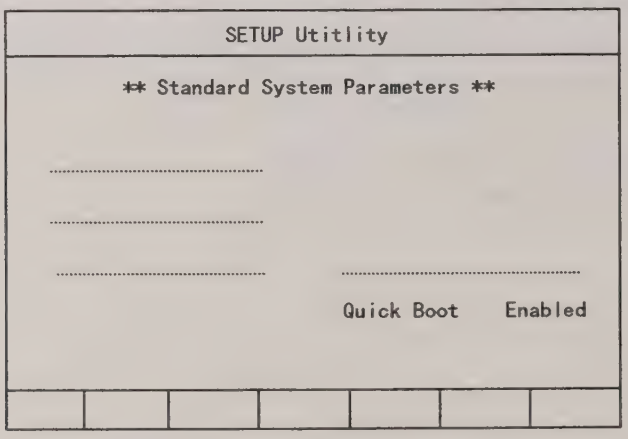

Figure 6-20 Recovery Preparations

   ③ Insert the recovery disk DISK1 into the FDD.

   ④ Press the ESC key and then F4. The recovery tool starts from FD and recovery processing begins

Recovery procedures

The software recovery procedures are explained below.

- System software recovery

1. After this system is ready for recovery, the recovery tool starts and the message below appears on the screen. When the message shown below appears, answer [Y] to proceed with recovery and partitioning. A reply of [N] will cancel recovery. For now, answer [Y].

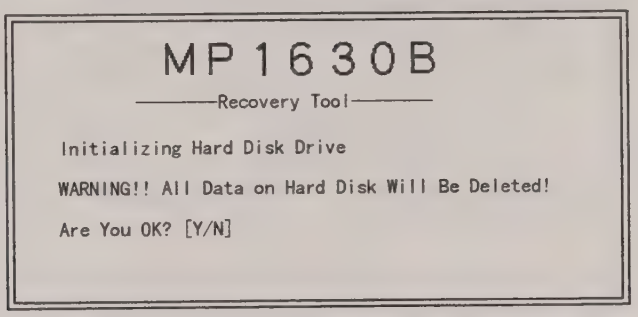

Figure 6-21 User Confirmation Message

2. The message shown below indicates that partitioning is in progress. The system will be booted when the partitioning is complete.

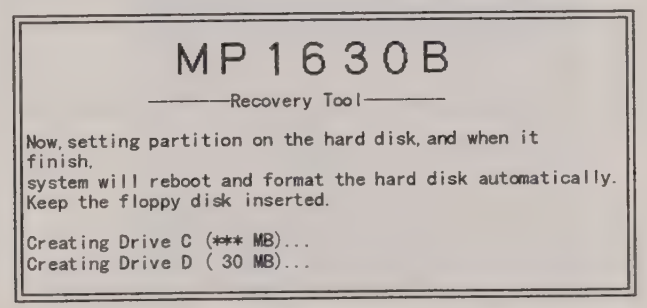
MP 1630B
Recovery Tool
Now, setting partition on the hard disk, and when it finish,
system will reboot and format the hard disk automatically.
Keep the floppy disk inserted.
Creating Drive C (*** MB)...
Creating Drive D (30 MB)...

Figure 6-22 Partitioning in Progress

3. When the system is booted, formatting of drives C and D begins. Before formatting starts, the message below appears on the screen to ask you if formatting is executed. In this instrument, however, [Y] is entered automatically and formatting begins.

4. When the formatting is finished, files are copied to the HD. Replace FDs as directed by the screen guidance.

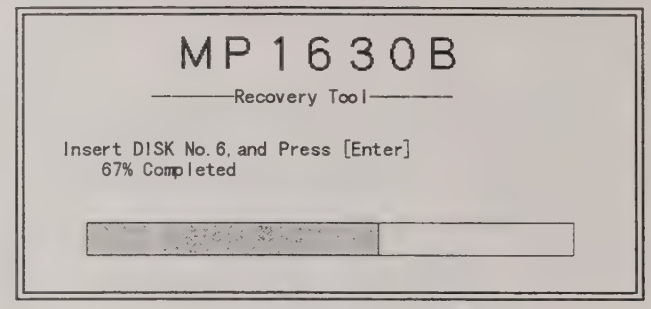

Figure 6-23 Copying in Progress

5. The appearance of the message shown below signifies the completion of system software recovery. Remove the FD and press the [Enter] key. The system is rebooted and Windows® starts running.

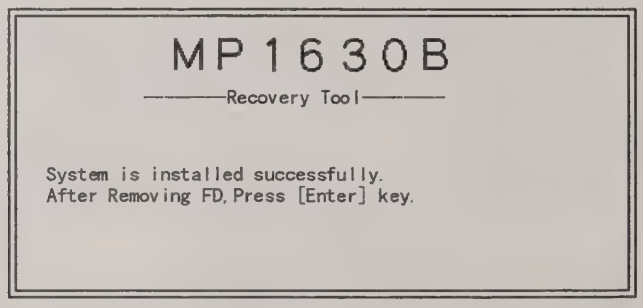

Figure 6-24 Completion of OS Recovery

- Application recovery

To carry out application recovery, follow these steps:

1. Insert the application installer disk DISK1 into the FDD and select [File]-[Run] from the Windows program manager. Type "a:¥setup" into the Command Line text box and click OK. Application recovery will begin.Replace FDs as directed by the screen guidance.
2. When the recovery is finished, an application icon (icon name: [MP1630B Digital Analyzer]) and MP1630B group are created icon in the program manager, and Windows® restarts.
3. The recovery of the system software and applications is now complete.

Messages displayed during recovery

The messages shown below may be displayed while recovery is in progress. Suggested responses are explained below.

1. "One or more Visual Basic applications are running. Please close those applications, then check OK to continue."
   This message is displayed when other application software is running.

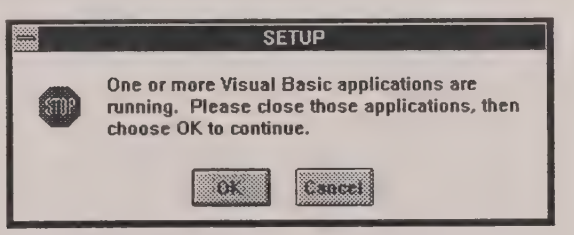
SETUP
One or more Visual Basic applications are running. Please close those applications, then choose OK to continue.
OK
Cancel

Figure 6-25 Message Dialog Box (No.1)

When this message is displayed, click OK close click after other applications. Procedure closing those applications is described below.

(1) To open the Task List dialog box, double-click on wallpaper(An area displayed no windows).

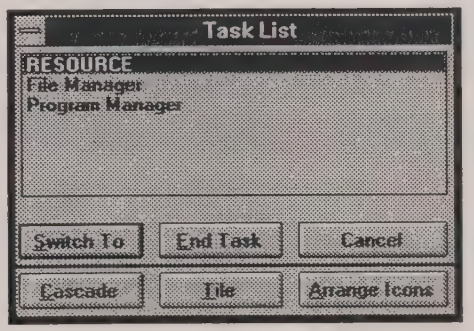

Figure 6-26 Task List Dialog Box

(2) To reverse application title you want to close, click the title string.

(3) Press End Task.

(4) Repeat (2) and (3), until all application without "Program Manger" and "SETUP" are closed.

2. "Can not copy file A: CTL3D.DL_ since the destination file is already in use"

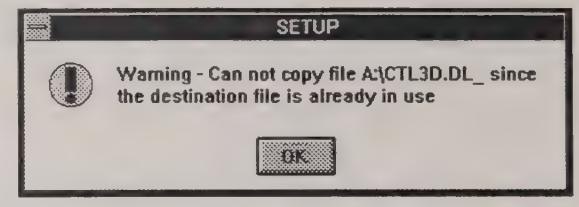

Figure 6-27 Message Dialog Box (No.2)

There is no problem. Click OK.

3. "MP1630B Application is already installed. May I overwrite?"
This message is displayed when application software already exists on the hard disk (only application recovery has been carried out, without system software recovery). The system versions of the existing applications and the application on the recovery disk are displayed in this dialog box. To display the detail version information of each application, click "Detail" button. Click Available Unit and the units associated with the individual applications are listed. To continue recovery, click Yes; to cancel, click No.

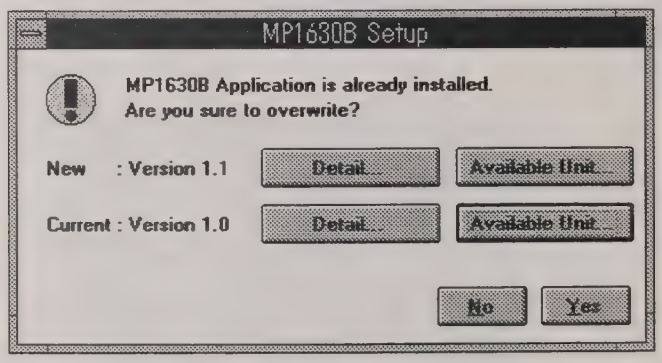

Figure 6-28 Message Dialog Box (No.3)

4. "MP1630B application is running"
This message is displayed when the application is already running. To continue recovery, terminate the application first.

5. "The Boot ROM version isn't compatible with this application"
This message is displayed when the boot ROM (ROM required to effect instrument start-up) is newer than the version supported by the recovery tool. Click OK to cancel recovery. The recovery tool may be outdated.

6. "The Main Frame version isn't compatible with this application"
This message is displayed when the instrument hardware is newer than the version supported by the recovery tool. Click OK to cancel recovery. The recovery tool may be outdated.

6.12 Using the MP1630B Menu

When the instrument application is terminated and then Windows® exited, the MP1630B menu program starts running, allowing the following menu of functions to be executed:

1. MP1630B Startup
2. Defrag
3. Scandisk
4. Windows Setup
5. MP1630B Startup with Default Settings

These functions are described below.

MP1630B Startup

Select 1 in response to Select Number on the menu and Windows® will start running.

Defrag

Select 2 in response to Select Number on the menu and the MS-DOS® command Defrag will start running.

The Defrag command rearranges files, recorded on the hard disk in a discontinuous sequence, into a continuous sequence to speed up access to them. Proceed to run Defrag as directed by the screen guidance.

Note

After many cycles of writing to and reading from the hard disk, the data stored on the hard disk would be gradually fragmented, or scattered. Fragmented data takes extra time to access when compared with defragmented data, though the data itself is the same. Defragmenting stored data makes the data faster to access, without such extra time.

Scandisk

Select 3 in response to Select Number on the menu and the MS-DOS® command Scandisk will start running.

The Scandisk command analyzes the status of the disk and correct errors. Proceed to run Scandisk as directed by the screen guidance.

Note

If you continue using a hard disk without correcting defective disk space, it will eventually fill up the free space. Further. applications could fail to run successfully or data might be lost. The Scandisk command restores damaged disk areas by analyzing the disk status.

Windows Setup

Select 4 in response to Select Number on the menu and the MS-DOS® version of the Windows Setup program will start running.

The Windows Setup program displays information on the currently installed hardware and software. It also detects new hardware or software as they are installed, and set them up to make them recognizable to Windows®.

Run this program when setting up the display, keyboard, and mouse. (The Windows® version of the Windows Setup program can be run from the Windows® Main group.) Both versions are similar in function, except the ways they are run.

- Key corresponds to front panel
  Windows Setup program uses Function or ESC key(s) to change /store setup(s). However, the front panel of this instrument does not have Function or ESC key(s). For this countermeasure, Panel Key on front panel corresponds to Function or ESC key(s) to change/store setup(s) without external keyboard.

Keyboard	Panel key on the front panel
F1	m/k
F3	n/M
F10	p/G
ESC	Remote

Note

Never run the Windows Setup program to alter settings, unless new peripherals have been connected to the instrument, requiring setup changes. See Chapter 3 for how to connect peripherals to the instrument.

MP1630B Startup with Default Settings

Select 1 in response to Select Number on the menu and MP1630B application will start with all setting initialized after Windows® start.

CHAPTER 7 MAINTENANCE

7.1 Daily Care

- To remove surface smears from the instrument, wipe with a cloth moistened with a weak neutral detergent solution.
- If dirt or dust collects on the instrument, suck with a vacuum cleaner.
- If parts, such as screws, get loose, retighten them using a specified tool.

7.2 Storage Notes

Pay attention of following points when storing the instrument for long time.

1. Remove surface dirt, smears, and other foreign before storing the instrument.
2. Avoid storing the instrument at +60℃ or higher or -20℃ or lower, or at relative humidities of 85% or higher.
3. Avoid storing the instrument in places that are exposed to direct sunlight or that are dusty.
4. Avoid storing the instrument in places where drops of water may collect on it or it may be affected by active gases.
5. Avoid storing the instrument in places that are liable to oxidation or subject to violent vibration.

- Recommended long-term storage conditions

The instrument should be stored over a long period of time in an environment meeting the following conditions, as well as those suggested above:

1. Temperature: 5℃ to 45℃
2. Relative humidity: 40% to 75%
3. Little temperature and humidity change per day

7.3 Shipping

When shipping the instrument, package it in the packing materials in which it had been delivered if they are still retained; if not, follow the packaging steps below. In handing the instrument, wear clean gloves and handle it gently with care not scratch or dent it.

1. Clean the exterior surfaces of the instrument with a dry cloth to remove smears and dirt.
2. Check for loose screws or screws out of position.
3. Safeguard the structural projections or those parts that may get easily deformed, and wrap the instrument in polyethylene sheets, and then package in moisture-proof paper.
4. Put the packaged instrument in a corrugated fiberboard box, sealing the seams with adhesive tapes. Finally, house the package in a skidded wooden box to suit the shipping distance, means and other relevant conditions.
5. In shipping, keep the instrument in an environment that meets the conditions suggested in Section 7.2, "Storage Notes".

7.4 Calibration

This instrument can be calibrated only by the manufacturer and nobody else. Periodic calibration is recommended to sustain satisfactory performance.

CHAPTER 8 SCRAPPING

This instrument contains a lithium battery. Its scrapping must conform to the requirements of the governing national and local regulations.

APPENDIXES

APPENDIX A DISPLAY-SPECIFIC SETUP ITEMS

Panel	Group box	Setup item	Default
System:System		Remote	RS-232C(COM1)
		System Mode	Normal Mode
	RS-232C(COM1)	Speed	9600
		Parity	None
		Data Bit Length	8bits
		Stop Bit Length	1bit
		Flow Control	None
	GPIB	GPIB Address	1
	Buzzer:System Error		ON
	Buzzer:Measurement	Error	ON
		Alarm	ON

APPENDIX B TROUBLESHOOTING

This instrument is loaded with the Microsoft® MS-DOS® Operating System and Microsoft® Windows® Operating System, so you can run applications or make Windows® setup changes the same way as you run Windows® on a personal computer.

This appendix lists problems that may result from Windows® setup changes and the suggested remedies.

■ The touch screen does not work

The touch screen would be disabled if you alter the mouse driver setting with the Windows Setup program. Set the mouse to TTwin v3.20:AR5000 and Digitouch with the Windows Setup program and restart Windows®. The touch screen will become operable after Windows® has been restarted.

■ The front-panel LCD display is off

The front-panel LCD would be turned off if you select ChipsCPL from Windows® Control Panel, start the display Driver Control Panel program, and then select CRT in the Display group box.

If an external display is connected to the instrument, select Both in the Display group box while observing the external display. The LCD display will be turned on. If an external display is not connected to the instrument, turn off the power, but not before checking to see that the hard disk access lamp is off. The LCD display will be restored when the instrument is turned on subsequently.

■ The external display is off

The external display would be turned off if you select ChipsCPL from Windows® Control Panel, start the display Driver Control Panel program, and then select LCD in the Display group box.

Select Both in the Display group box while observing the front-panel LCD. The external display will be restored.

■ Application characters are not displayed correctly

Application characters would not be displayed correctly if you delete the font of characters used by the instrument application by running the Fonts program from Windows® Control Panel.

Reinstall the font deleted by running the Fonts program again.

■ The message to insert Windows® DISK displayed

The message of "Insert Microsoft Windows 3.1 Disk #5 ...." may be displayed while setting the printer via Printers of Control Panel. In this case, insert the attached Recovery Disk to FDD.
The table below define the disk number of Recovery Disk corresponding to displayed disk number by the message.

Displayed disk number by the message	1	2		5	6
Disk number of Recovery Disk	5	6		9	10

INDEX

ED Clock Loss 6-19
EXT Clock Loss 6-19
FIFO Empty 6-19
FIFO Full 6-19
MP1630B menu 6-31
Open dialog box 6-7
PLL Unlock 6-19
PPG Clock Loss 6-19
Printer Setup dialog box 6-23
Quick Open dialog box 6-6
Quick Save dialog box 6-4
Save dialog box 6-5
System:Option panel 6-21
System:System panel
  GPIB dialog box 6-12
  RS-232C (COM1) dialog box 6-10
  System Mode dialog box 6-14

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